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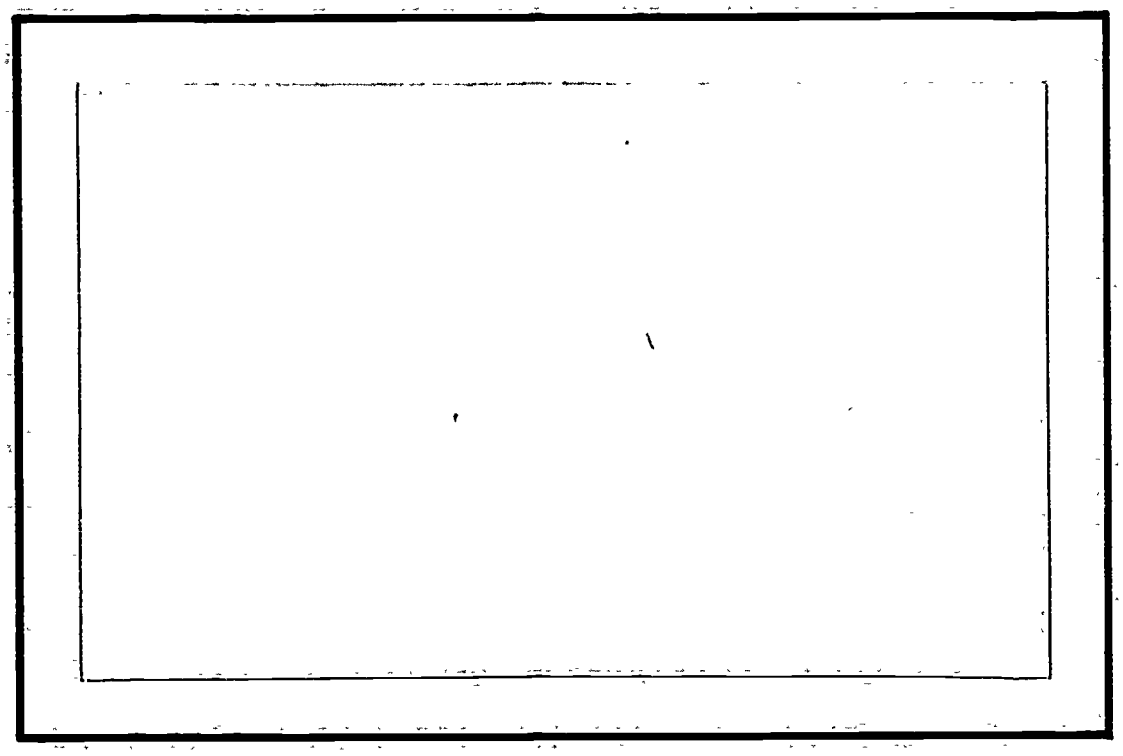
ABSTRACT

This report briefly describes a summer workshop on individualizing instruction in which 34 teachers, instructional team leaders, and administrators participated. It lists workshop personnel and participants. The major part of the report consists of eight papers written by workshop staff. Titles are (1) "The Importance of Assessment and Behavioral Objectives in Individualizing Instruction," (2) "Overview and Meaning of Individualized Instruction," (3) "Individualization in Mathematics," (4) "Differentiated Staffing in the POISE Model," (5) "Motivational Procedures in the Individualization of Instruction," (6) "Organization in Individualization," (7) "Individually Guided Reading," (8) "Microteaching and the Minicourse--A Brief Overview of the Programs of the Far West Laboratory." (RT)



TEACHER EDUCATION RESEARCH CENTER

STATE UNIVERSITY COLLEGE

FREDONIA, NEW YORK

Selected Papers

SUMMER WORKSHOP in INDIVIDUALIZATION OF INSTRUCTION

1970

Teacher Education Research Center

State University College
Fredonia, New York

Table of Contents

Foreword

The two-week Workshop in Individualization of Instruction reported in this summary was offered at the State University College at Fredonia during the period August 3-14, 1970 through the cooperative efforts of the Teacher Education Research Center, the Education Department at Fredonia, and the Southwestern Association for the Improvement of Instruction.

Invitations to participate in the workshop were extended to personnel from area schools who were currently involved in implementing programs of individualized instruction or who expressed an interest in undertaking efforts for individualization of instruction. Some thirty-four teachers, instructional team leaders, supervisors and administrators representing twelve school systems participated.

The planning and offering of the workshop provided unusual opportunities to serve several distinctive purposes of the cooperating agencies. The workshop provided a means for:

1. The Teacher Education Research Center staff to gather data and experience for the development of a training package, Introduction to Individualization of Instruction.*
2. The Education Department to increase the knowledge and experience of area school personnel in fundamental components of individualized instruction through systematic study and research.

*Note: The development of the training package, Introduction to Individualization of Instruction is well underway. It is anticipated that field testing of this training package will be carried on beginning summer 1971.

3. The Southwestern New York Association for the Improvement of Instruction to provide service to area school personnel in solving critical on-the-job problems, i.e., individualizing instruction.

Every effort was made, in the operation of the workshop, to practice the philosophy of individualization of instruction. While large group presentations were used by local and visiting staff to acquaint workshop participants with fundamental concerns inherent in efforts to individualize instruction, most of the time was spent in small interest groups and independent study. Each workshopper was asked to identify and work on, throughout the two-week period, a significant project which would contribute toward the improvement of individualization efforts in her own school. Workshop staff were available throughout the workshop for individual and small group consultation.

There appears to be little question but that the workshop was a success both from the quality of participant projects, and from the level of knowledge displayed by workshoppers on an anonymous test of the important essentials of individualized systems of education. While the specificity of individual student projects does not warrant the use of Fredonia's limited staff resources for wholesale dissemination, results of the test are being made available to participants in a special report. Further in-depth evaluation of the workshop is currently underway in the Teacher Education Research Center and will be reported later.

Special thanks is due, for their unique contributions to the workshop, to Mary Quilling of the Research and Development Center for Cognitive Learning at the University of Wisconsin and to Walter Borg of the Far West Laboratory at Berkeley, California.

A special "thank you" is also directed toward the members of a special panel on, "Institutional Roles in Programs of Individualized Instruction." This was a highlight of the workshop which evoked many comments from participants concerning the difficult realities of attempts to bring about change in the schools. But even more importantly, recognition was given to the fact that substantial innovations can take place where there is a directing philosophy, a willingness to test new ideas, and a commitment for cooperation on the part of the community, the school board, the administration and the instructional staff.

Members of the special panel were:

Mr. Samuel Danton - Supervising Principal, Cassadaga Valley Central Schools

Mr. Herman Swanson, President, Cassadaga Valley School Board

Mr. Anthony Link, Director, Differentiated Staff Study Program, Williamsville Central School

Mrs. Lois Hough, Principal, Glidden Elementary School, Southwestern Central Schools

Mr. Richard Miga, Director, "Chautauqua Project," B.O.C.E.S., Chautauqua County

Dr. Robert Heichberger, Acting Dean of Professional Studies, State University College, Fredonia

Dr. Kenneth Nelson, Director, Teacher Education Research Center State University College, Fredonia

Dr. Robert Driscoll, Director of Student Teaching, State University College, Fredonia

Dr. John Bouchard, Executive Secretary Southwestern New York Association for the Improvement of Instruction.

The staff papers presented in this report imply in no way that a comprehensive coverage of Individualization of Instruction has been achieved. But, if the reader achieves a better understanding of the critical components of individualized instruction presented herein, the investment of staff effort may be judged as well worthwhile.

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The Importance of Assessment and Behavioral Objectives in Individualizing Instruction

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A great deal has already been said about individualized instruction. However, many teachers would pose a difficult question - "How do I get started and, once started, how do I keep on?" The most critical part of the answer to this question is that the teacher must have a very clear idea of the objective she is trying to achieve with each pupil. In truly individualized instruction these objectives might be quite different for each child. Once an objective is selected, a teacher must have a very well defined plan of the materials, techniques and amount of practice that the child needs to study and experience in order to attain her objective. Then, a careful, constant track of how far the child has progressed toward its attainment must be kept. This is important because without it the teacher would never know when the pupil was ready to start working toward the next objective or whether he had stopped progressing toward the current one. To summarize, the individualization process consists of three main parts:

1. The selection of appropriate instructional objectives for each pupil.
2. The selection and application of the appropriate educational experiences, instructional techniques and study materials for the pupil.

3. Continuous assessment of the pupil's progress toward the objectives.

During the workshop most of the time was spent on the second of the three parts of the individualization process namely pupil activities, instructional techniques and study materials in reading and mathematics. This paper will be devoted to the selection of objectives with just a little about the assessment of pupil progress toward their attainment.

First, consider instructional objectives in relation to educational goals. An educational goal is a general statement of a desired outcome of education. For example, to develop in the pupils an ability to read with comprehension and speed is an educational goal. Is is too general to be of much help as an instructional objective. Educational goals have been variously expressed. The Cardinal Aims of Education enunciated by the Educational Policies Commission of the NEA in 1937 included a list of seven aims of education. Among these were a command of the fundamental processes, worthy home membership, good citizenship, worthy use of leisure time, vocational efficiency. These are goals which, like Heaven, are "not attained by a single bound." They are ultimate objectives which must be attained by a methodical step-by-step process. It is the definition of these steps that will be the concern of this paper.

If the analogy of steps to achieve a goal is carried further they can be organized into flights like stairs. The first flight consists of deriving from the ultimate goal a series of subgoals. For example,

the ultimate goal - Command of the Fundamental Processes - is much too general to be of functional value to the classroom teacher. To make the goal more specific communication, computation and reasoning processes must be identified as making up the fundamental processes. These are helpful but, are still too general. Looking now only at communication processes, it is required that the pupils develop skills in reading, writing, speaking, and listening. Notice that developing skills are now being talked about. This is more specific but a further step must be taken. Of what do reading skills consist? In order to read with comprehension and speed, knowledge of vocabulary, terminology, specific facts, ways and means of organizing written materials, language usage and style are necessary. Therefore, before reading skill can be achieved basic knowledge must be acquired by the learner. The teacher and pupil must determine what things must be known by the pupil for him to read at a particular level of competence. The teaching methods and instructional materials used with a pupil will depend upon the particular levels of skills and knowledge he has attained and the levels of skill and knowledge the teacher and pupil are striving to attain. So much for knowledge.

Next, is understanding or comprehension skills. They consist of the ability to translate, to explain and to predict. These are skills which must be demonstrated and then developed by the pupils through practice upon material of appropriate difficulty.

The first flight of steps in individualized instruction consists of determining a set of day-to-day instructional objectives which will, when attained by the pupil, move him steadily toward the attainment of the

overall goal.

The second flight of steps consists of arranging a set of materials, instructional procedures and practice activities which will allow the student to progress from his current skill and understanding level to the next. To do this there is a need to know the level of skills and understandings possessed by the pupil at the beginning of the sequence. If this knowledge isn't attained much time will be wasted having pupils doing things they have already mastered or in having them attempt to do things that are too far above their skill level. By the same token there is need to know when a pupil has attained a level of skill and understanding sufficiently to move him along toward successively higher goals. This second flight of steps can only be constructed if there is a planned program of continuous assessment.

An assessment program for Individualized Instruction must be composed of two main parts. First of the two is diagnostic assessment. Through diagnostic assessment the initial status of the pupils' skills and understandings with respect to the instructional goals can be ascertained. Diagnosis must go far beyond the establishment of initial status of pupils. It must also provide information about the particular difficulties that the pupils have. Through diagnosis an answer to this question can be obtained: "What is the nature of the problem that this student has which is preventing him from developing this skill?"
The second main part of assessment is mastery level determination. Through mastery determination information is obtained concerning when a

pupil has reached the desired level of skill attainment and is ready to proceed to the next level of objective. No truly individualized instruction can be carried out without use of such an assessment program.

The teacher has two methods of assessment available for use; they are formal testing and informal testing. They are equally important and both should be used. The formal testing method consists of structured tests, quizzes and term report evaluation. The informal testing method consists of oral questions and answers, observation of the pupils' work methods including notebooks and classroom behavior patterns. All assessment, whether formal or informal, should be goal specific to be of value. In other words it should always help the teacher to determine the degree of skill that a pupil has developed or to determine why a pupil is not attaining an appropriate level of skill. It should be a natural, integral part of the teaching-learning process. As such it should be enjoyable for both pupils and teachers. It should not strike fear in the hearts of the pupils. But, above all, it should be carefully planned in advance.

To assist in the advanced planning it is sometimes helpful to construct an instructional blueprint (see figure 1). In the first column of this blueprint table is a hierarchical list of cognitive skills. These are general and can be applied to any subject matter and to any grade level. For example, before pupils can carry on any activity they must have at their command basic knowledge. They must have a vocabulary of terms. They must have some basic facts. In math these could be the number facts of addition. They must know the basic ways and means of

dealing with specific facts. In reading they need to know that sentences express complete thoughts. That is a specific reading fact. The period or full stop is a way by which this fact is dealt with in reading. The question mark and the exclamation mark are other ways of dealing with the sentence fact. In the category of comprehension we are concerned with developing the child's capability to understand what he has read. The lowest level of understanding a story is to be able to tell it in the child's own words. The next higher level is to be able to read a passage and then to succinctly express its meaning. Extrapolation, the highest of the three comprehension skills is the making of a prediction of what would have happened if some different course of action had been taken by one of the characters of a story. Application skills are those that allows a pupil to utilize his knowledge and comprehension skills to solve an immediate problem. For example, as children are introduced to new words, the teacher wishes to increase their vocabularies and exercise their knowledge and comprehension of the use of references by suggesting that they look up the new word in the dictionary, stating its meaning in their own words. To some people analysis skills are too complex for beginning readers. This is not true. Structural linguistics can be begun at an early age and at sufficiently low levels of conceptualization. These skills form the basis of most of the word-games which teachers use with children such as seeing words within words or sentence analysis such as determining subject, verb and object.

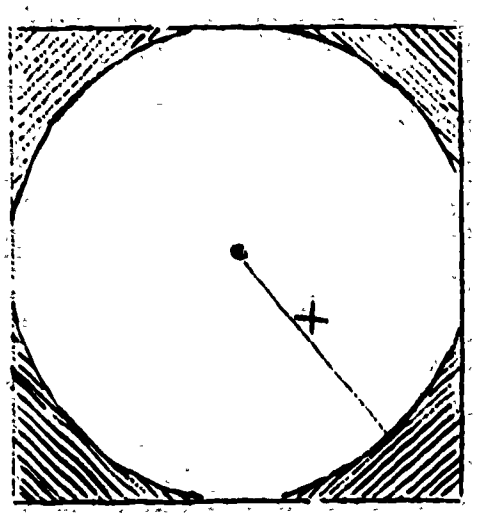
The second column is labeled Ordered List of Specific Building Blocks. In it should be listed the specific items of knowledge, skills of comprehension, application, etc. which the pupils should acquire in a

particular time period, say one week. These are the real instructional objectives which were mentioned earlier. They are the immediate goals of all that is done with and for pupils during the week. The third column is headed Pupil-teacher Activities. This is an exhaustive list of the things the teacher and the pupils do to develop the skills and to acquire the knowledge listed in column 2. Finally, in the fourth column are listed the Evaluative Criteria in terms of pupil performance. The best way to think of these items is, if a child has developed a skill sufficiently to allow him to move on to the next level of complexity of learning he should be able to do these tasks, solve these problems and make these analyses. For example, a child may have learned in his vocabulary instruction the words "help" and "full" but had not been introduced to the word "helpful." If he has developed his analysis skills he should be able to see the two words in the one. He should be able to apply his knowledge of the meaning of "help" and "full" to obtain a clear meaning for the new word and to use the new word in a little story. From the list in the fourth column test problems and questions can be constructed. These will probably be oral or performance rather than written with very young children. They do not need to come at the end of the instructional period. Rather, they are scattered appropriately throughout so that teaching - practice - evaluation are going on simultaneously.*

A word of caution should be injected here. If it is desirable to test the child's knowledge to find out if he can recognize words in

*Note. Try to develop an Instructional Blueprint for a 2-3 week period in your major subject area for use with a class you are teaching.

the list he has already studied, or to recall the purpose of punctuation marks, direct questions can be asked. However, if it is wished to test his comprehension, application, or analysis skills he must be presented with a problem which is slightly different from the examples with which he has previously worked. If he is asked to repeat a prior analysis it is likely he is merely recalling the earlier solution. Thus to test a pupil's ability to comprehend, apply, analyze, synthesize, or evaluate, he must be presented with questions or problems or asked to perform tasks which are similar but not identical to the example exercises. For example, suppose that in math the objective has been to develop a comprehension of the areas of plane surfaces and to apply and translate formulaes for their calculation. The pupils could be presented the following problem. "Write a formula for finding the area of the shaded portion of the following figure."



The pupil must know the formula for the area of a circle. He must know the formula for the area of a square. He must recognize that the shaded portion is the difference between the two areas. He must recognize that the measure of the side of the square is 2 x. Thus, area of square $= (2x^2) = 4x^2$.

The area of the circle = πx^2

The area of the shaded portion = $4 x^2 - \pi x^2$

Which can be simplified to $x^2 (4 - \pi)$.

If a pupil can go through the problem and arrive at a solution he has achieved complete mastery of the particular skills involved in the instructional objective and is ready to move on. If he cannot, some further instruction and practice is needed. There is a chain of events through which the pupil has to pass to arrive at the solution. If he doesn't arrive at the correct solution which link of the chain is missing? If provision is made ahead of time to trace the pupil's procedure in solving the problem it is easy to determine where his difficulty lies and take the necessary steps to correct it. However, this is jumping ahead into the area of diagnosis.

A discussion of the structure of evaluative items is now needed. Each item sets a task for the child to perform. The successful performance of the task requires basic knowledge, comprehension, analytical skills and ability to synthesize a response. These are the precise instructional objectives which need to be developed. Thus each item is objective - specific. Unless it has the purpose of determining only if the pupil can recall a specific term, date or fact, it must be an item that the pupil has not encountered before. Thus, don't make up tests using items at the end of the section in the textbook. Use ingenuity to build interesting and novel items. If items have to be stolen, and all good teachers do, steal good ones!

The writing of items is a tough job. Don't attempt to write a fifty-item test the day before it is to be administered. Similarly, don't try to formulate oral questions on the spur of the moment. A repertoire for various purposes is needed. Always try to think of problems which will require that pupils exercise or require the demonstration of the skills that have been developed. Write them down as they are thought of. Refine them so that they are succinct statements that define the task which the pupil is to perform. Classify them according to the skill which they are designed to test and according to the subject matter unit with which they are concerned. Then file them in a readily accessable, cross referenced system. Eventually a bank account of such items will be built up which relate to all aspects of instruction. Keep it current and up-to-date by the frequent deposit of new items and the deletion of old or ineffective items.

Now, thinking about how to use an item bank is important. Every time a teacher comes into contact with one or more pupils on anything more than a casual meeting she should have a purpose in mind. Here again is the instructional objective rearing its head. To give the pupils a session of practice with certain skills the teacher should go to her file and review the items which pertain to that skill. Select a series which will lead the children through a skill building sequence of activities. This will simplify planning. In the actual session with the pupils the problems or items can be presented in any manner that is appropriate. Oral presentation is appropriate for short items which require a quick on-the-spot response. There should

be written presentation for longer items that require more detailed response. Some may require homework to be handed in at a later time. The pupils' responses should be observed carefully. They should be moved through the preplanned sequence. Notes should be made of the difficulties encountered by individual children. If certain children are having difficulties the rest should be given a more detailed question in writing which will occupy their attention for a few minutes while the teacher deals with the specific hang-ups of the few. These are just suggestions. There is no pat formula. But, the point is, if a bank of items is used to help in planning the teacher's activities and those of her pupils, she will have more time to think of motivating pupils, of spicing up her presentation and making learning and teaching a fun experience.

It will be noticed that nothing has been said about evaluating pupil performance. Up until now the major focus has been on assessing pupil responses to the questions or learning tasks. This is using testing at an informal level to help plan, arrange and control the learning sequence. From time to time it will be necessary to evaluate pupil performance on a more formal basis. In the traditional schools these times come at the end of subject matter units or before report card time. At these times all pupils are tested with the same test and the school age-grade norms are applied to the entire group. In individualized instruction such procedures are inappropriate. What is proposed here will require much more of the teacher but in return will yield much more in results. If a teacher has planned activites effectively she will find that developed blocks of related skills

have been developed which add up to the attainment of what can be called intermediate objectives. The question to be answered at the conclusion of the practice and activities devoted to this block of skills is: "Have the pupils mastered this group of related skills to a sufficiently high degree to move them along to the next block in the series." This may happen at different times for different pupils. A more formal test should be administered. Tests should be made up by drawing appropriate items from the item bank being careful to select those not previously used in instruction or practice sessions. The test should be administered to those children who are ready for it regardless of what is going on with the remainder of the group. In fact, some children of the group may be tested at every group session. On the basis of the results of these tests it may be appropriate to reconstitute the instructional groupings.

If the reader is not thoroughly confused already that situation will be remedied as standards of performance are introduced. Individualized instruction is based on the assumption that the same level of performance can not be expected of all children. In individualized instruction one must have for each child a well defined level of expectation. That is, it should be known to what level each pupil can be expected to achieve if he has an optimal learning and practice experience. There is no point in demanding more and the teacher does the pupils a great disservice to require less. Any marks assigned should be made relative to this standard. Therefore, the teacher should know her pupils and their capabilities. She should move away from

fixed, group-norm standards as quickly as possible because they are fatal to efforts to individualize.

The diagnosis of pupil learning problems is of prime importance if instruction is to be individualized. The term diagnosis is somewhat unfortunate. It has a medical connotation of identifying illnesses. Educational diagnosis must do more than identify the underlying causes or reasons for pupil failure to attain objectives. It must also be useful in identifying the strengths of pupils as well as their weaknesses. It should give information concerning the most appropriate types of learning experiences for each pupil. Much of the expertise which a teacher or teaching team has must be developed through actual performance of the function, the main ingredient of which is discriminating judgment.

First, think about assessing the characteristics of the learner. The teacher should know something of his general and specific abilities. For this, verbal and quantitative intelligence scores can be used and should as nearly as possible reflect the pupils current status. The teacher should know something about the pupils' temperament. Is he calm or excitable? How does he react under tension or pressure? In learning is he visually, auditorially or tactically oriented? These characteristics can best be assessed by observing the child in the learning situation and in play activities with his peers. They are invaluable as indicators of the best ways to handle individual children.

The situation may require that learning difficulties be identified. Here the teacher should resort to her question bank. By using an appropriate selection of questions the teacher can quickly identify the

problem. If the teacher has constructed questions carefully she will know that a particular type of wrong response by the student will indicate the type of misunderstanding, misinformation or inappropriate analytical technique which the pupil was using. The teacher can then plan appropriate instructional steps to correct the problem. Usually it requires that a series of probing questions be asked of the child to identify the problem and indicate a corrective course of action. If in a small group session one of the pupils responds to a skill or comprehension question incorrectly it may well be that he misunderstood the question. In most cases a further question will reveal that no remedial action is necessary. A word of caution, pupils will become flustered if they are asked a series of questions in rapid fire order. If a child misses a question don't make a big production out of it. Ask questions of other members of the group. Then quietly and naturally return to the particular child with a probing question. This may have to be done several times. Remember, children are extremely sensitive and perceptive to subtle changes in the teacher's manner. If their efforts are pounced upon they will quickly interpret the teacher's role as that of an adversary.

Consideration has been given the general procedure of interpreting pupils' wrong responses. A great deal of useful information can be obtained from the patterns of pupils' correct responses. Suppose that the teacher has given a fifty-item test at the end of an instructional sequence. When the test was scored and tabulated the teacher found that twelve children have made scores of thirty-five. Most people would

assume that these pupils were identical. But, in reality, no two of the twelve children obtained this score on the basis of answering the same thirty-five items correctly. Some of the children may have answered most of the recall items correctly but missed most of the comprehension and application questions. Others may have not done nearly as well in recall but much better on the higher type skill questions. Remember, all builders like to have strong foundations. Thus in prescribing remedial instruction, work should be based on the strengths of the pupils. Already developed skills should be utilized in the building of new skills.

It is hoped that it is now realized that there is no set formula for pupil assessment and evaluation. In education the only purpose is to develop the skills, abilities and attitudes of children to the greatest possible degree. This must be done through making and implementing instructional decisions. Each teacher has a repertoire of teaching skills and techniques. The school provides a repertoire of curricular materials and instructional equipment. It is the teacher's job to arrange the optimal sequence of these for the individual children by making and carrying out instructional decisions.

There are four ways of making decisions: 1) traditionally - this is the way it's always done; 2) intuitively - by feeling; 3) randomly - by flipping a coin and, 4) rationally - by using information to select and carry out the decision which has the greatest probability of attaining the objective.

Individualized instruction requires that instructional decisions be

made and carried out for individual children. The information needed to make these decisions can be summarized into the following questions:

1. Where is the child in relation to the instructional objective? This question must be answered at the beginning, at the end and repeatedly throughout the teaching-learning sequence.
2. What is a reasonable expectation of performance of skill for this child?
3. What are the characteristics of this child which should be considered when devising instructional procedures, pupil activities and motivational devices for use with him?
4. If this child has not attained a goal, what are his difficulties?
5. To what extent has this child reached the level of skill that could reasonably be expected of him?

If these questions can be answered through assessment activities, teaching will be lively, interesting, creative and above all, effective.

Figure 1

Instructional Blueprint*

Cognitive Skills (1)	Ordered list of Building Blocks (2)	Lists of Teacher and Pupil Activities Associated with each Building Block (3)		Evaluative Criteria in Terms of Pupil Performance (4)
		Pupil Activities	Teacher Activities	
I. Knowledge of a. Terminology b. Specific facts c. Ways & Means of dealing with specifics d. Connections e. Theories & Structures	here would be listed the essential elements of knowledge to be learned in the order that they should be mastered.			list here the things a pupil should be able to do if he has achieved the knowledge identified in columns 1 and 2
II. Comprehension Interpolate Interpret Extrapolate	list of stories and passages of reading to be interpreted			list here the things a pupil should be able to do if he has obtained the understandings specified
III. Application Solve problems	ordered lists of types of problems to be solved			list of things a pupil should be able to do if he has developed the specified application skills
IV. Analysis				
V. Evaluation				

*See A Taxonomy of Educational Objectives, Handbook I Cognitive Domain, Bloom, Benjaman and others, University of Chicago Press, 1964, for a complete discussion of cognitive skills.

Overview and Meaning of Individualized Instruction

John B. Bouchard
Professor of Education

State University at Fredonia

Importance Attached to Individualized Instruction

It would be difficult to identify a topic which has had more universal advocacy among educators than, "individualizing instruction." Such objectives as, "let each become all he is capable of being" have both individual and social appeal. There is no question that each individual in our society seeks his unique fulfillment for "life, liberty, and the pursuit of happiness" as a functioning citizen in the society. It is equally important to a democratic society that each individual citizen perform at his best possible level in order to perpetuate and enhance the society in which he lives. With these individual, social goals in mind, educators have long paid verbal homage to the desirability of individualized instruction as a means of adjusting the learning experiences provided by the school to the unique capabilities, interests, and needs of each pupil enrolled in the school. Unfortunately, such lip service is not often followed by carefully planned, realistic, and effective efforts to truly individualize instruction.

Meaning of Individualized Instruction

It is important to distinguish between "independent pupil study" and "individualized instruction." While pupil independence is a goal of

individualized instruction, few educators would support a strategy of learning in which each student assumes sole responsibility for his own growth and development. Indeed, the very existence of the school rests on the belief that youth can best be equipped for citizenship in a society through the continued guidance of school personnel especially trained to anticipate and provide for the demands of that society. Unfortunately, because of many complex factors, guidance of pupil learning experiences in the schools has tended to stress group rather than individual needs and differences. If the school is deliberately to provide for each of its students, a shift must be made from concern-with-groups to concern-with-individuals. A system of individualized instruction offers a promising approach.

Individualized instruction may be defined as the interaction between a student and school personnel which results in the adjustment of learning experience to the unique interests, capabilities and needs of the learner. It is readily apparent from the literature that the schools, over the years, have experienced indifferent success in implementing truly individualized systems of instruction. It is important to note that most such efforts have been directed in implementing individualized instruction within a school structure designed for the effective management and treatment of groups of pupils. Conceivably, if individualized instruction, rather than accommodation to the existing school structure is designated as the overriding objective, a far more facilitative environment can be achieved for meeting the unique interests, capabilities and needs of each child in the school. The Pupil Oriented and Individualized System of Education (POISE Model) which is being developed at the

State University College at Fredonia represents an effort to create a total school environment which is facilitative to individualized instruction.

It must be recognized, however, that certain obstacles to the individualization of instruction exist within any school environment, no matter how facilitative it is designed to be in meeting the unique capabilities, interests and needs of each pupil. This paper briefly identifies and describes several of the major obstacles. Despite these impeding factors, the staff in any school can achieve effective individualization of instruction. Some of the most promising approaches are subsequently discussed.

Factors Impeding the Implementation of Individualized Instruction

While there are undoubtedly other conditions in the schools which make it difficult to plan and provide instruction for individual pupils, the following are formidable obstacles:

1. Lack of reliable data concerning the interests, capabilities and needs of individual children

   For years, attempts have been made in the schools to assess individual capabilities and needs through the use of normative or group comparison data. Unfortunately, it is of little value to the teacher, in making curriculum decisions for an individual child, to know that he compares with his age mates as being at the third month in the fourth grade. What is required, is an intimate knowledge on the part of the teacher, of the specific skills which the youngster

has mastered, and the further sequence of skills he needs to master if he is to continue at a satisfactory rate of progress. Only recently have the schools become concerned with criterion-based or mastery-level skills rather than norm-referenced behavior. Insofar as pupil interests are concerned, teachers make the assumption that all children can and should be "turned on" to study the same things at the same time. Little effort is made to ascertain the interests of individual children and to use such information for providing curriculum alternatives.

2. The Uneven Growth of Children

That there is a wide range of achievement and performance among children at any age grade level is well-documented by many research studies. Attempts to reduce the range of ability among children by homogeneous grouping have largely been unsuccessful. There is evidence to the effect that homogeneous groups contain some 80 per cent of the variability of comparable heterogeneous groups in the traits or achievements used for grouping; in other characteristics, the homogeneous group exhibits about the same variability as comparable unselected groups.

3. Lack of Information as to the Best Modes of Learning for Individual Children

Most of the research on how pupils learn in school is focused on the characteristics of children in groups. While studies show, for example, that praise is generally better than reproof in bring-

ing about better achievement of children this research has been interpreted from interactions with groups of children. Little is known about the effects of praise vs. reproof on the learning of individual children. In short, while the accumulative effects of an experimental variable may be such that average performance of children is enhanced, there still remains the strong possibility that application of the variable in question may be detrimental to some of the individuals within the group.

4. Individual Variations Among Teachers as to Tasks Performed

There is little question but that wide differences exist among teachers as to the importance they attach to the tasks assigned to them in the school and their ability to perform their tasks. There is also little question but that in the typical school teachers are expected to be "jacks-of-all-trades." Even a cursory review of the literature on induction reveals that few schools have systematic, on-going inserivce-training programs for better equipping teachers for their assignments. Where induction programs do exist they typically feature brief orientation sessions for all teachers on topics preselected by school administrators. Each teacher - when she appears on the job - is expected to plan well, instruct children effectively, be a good disciplinarian and classroom manager, and to have, especially at the elementary school level, equal command in a wide variety of school subjects. If, as seems reasonable, the assumption can be made that individual differences among teachers are as great as differences among other segments of the population,

the concept of "equal competencies" among teachers is ill-found.

Possible Approaches to the Individualization of Instruction

There are many approaches to the individualization of instruction. Some of the most promising will be described briefly below.

It is important to note that each of the means proposed for achieving individualized instruction may be utilized in any form of school organization. However, a facilitative school environment such as the POISE Model will provide for the optimum utilization of techniques and procedures proposed for individualizing instruction. It should also be noted that no technique or procedure for individualization of instruction can exist completely by itself; effective individualized systems of education appear to call for the interplay and interaction of many forces and factors.

1. Individualization may be achieved through adjusting a pupil's rate of progress

Attempts to individualize instruction through adjustment of pupil rate of progress have been frequently described in the literature. The Winnetka Plan, in the early years of the century, represented a systematic effort to adjust pupil progress, and for a time, won quite wide-spread recognition as an innovative approach to individualization of instruction. Recently, Carroll(4) in his, "A Model of School Learning," expresses the conviction that nearly all students enrolled in a school can achieve basic understanding of required learnings

through adjustment of time. His model includes five elements - three which relate to the individual and two which come from external conditions. Individual factors are: a) the learner's attitude - the amount of time the learner requires to learn the task under desirable conditions of instruction, b) the learner's ability to understand instruction, c) perseverance - the amount of time the learner is willing to devote to the learning. External factors are: d) the opportunity and time allowed for the individual's learning, and e) the quality of instruction - "a measure of the degree to which instruction is presented so that it will not require additional time for mastery beyond that required in view of aptitude." It is readily apparent that certain considerations must be taken into account if individualization of instruction is to be sought through adjustment of pupil rate of progress. It is first necessary to identify where the pupil is in terms of his achievement so that the appropriate point of entry is subsequent learning can be determined. It is next required that the instructor help the pupil identify and use a pace which is comfortable to the learner. It appears essential also that the learner be given constant feedback so that he has knowledge of his progress.

The concept of some adjustment of rate of pupil progress should probably apply to all areas of learning for which the school is responsible. There are some dangers, however. The early efforts undertaken in the Winnetka Plan frequently resulted in stereotyped curriculums. While a case can probably be

made that all students should be required to master certain basics in such skill areas as reading and mathematics, it appears to be hardly justified to propose the same curriculum for all students in such broadly conceived content areas as literature, the social studies, and science.

2. Individualization Through Adjustment of Instructional Modes

While there is little doubt but that teachers vary tremendously in their instructional modes and techniques, there is little evidence in the literature concerning the influence of various instructional modes on individual learning. As has been previously discussed, what research is available tends to show the accumulative effects of various kinds of instructional techniques and procedures on groups of children. It seems safe to predict that the future holds some intriguing possibilities for research concerning the influence of instructional variables on the learning of individual pupils. However, from a pragmatic point of view, it does appear worthwhile to consider utilization of variations of instructional modes which a) promise to have appeal for the learner, and b) extend his choices as to how he undertakes his learning responsibilities.

The most obvious and best known mode for teaching individual children is, of course, the teacher-pupil tutorial situation. This is, however, an expensive approach. If true individualization of instruction can be achieved effectively only through the utilization of a one-to-one teacher-pupil tutorial system, the cost would be exorbitant and beyond the ability of the schools. There are some refinements of this approach which are

feasible, however. One such is the small ability group of perhaps five to eight pupils who are near or at the same level of achievement in the skills to be learned. The teacher probably can as effectively individualize instruction for all of the children in this small ability group as she can by working with each individual child.

Peer instruction, in which one pupil teaches another, appears to offer a very fruitful mode of individualizing instruction. Potentials for this kind of instruction lie both in the possibilities for individualized attention for the child who is to do the teaching as well as to the recipient of his instruction. Preliminary work at the University of Wisconsin Center for Cognitive Learning (6) suggests that peer instruction holds forth real promise for the development of positive attitudes on the part of both the student-instructor and the student-learner. Exciting possibilities appear to lie in the use of motivational factors such as praise and feelings of success.

Independent study on the part of the pupil and contract plans appear to offer additional techniques for individualizing instruction. The contract plan is particularly rewarding when the pupil involved participates with the teacher in the development of the contract. One caution is indicated. The contract should be truly individualized for the student who undertakes the contract. The use of stereotyped contracts is no better for individualization than the typical single assignment to a classroom of youngsters if eventually all pupils are to go

through the same contracts.

The effective teacher can individualize instruction through careful use of questioning and dialogue even with classroom size groups. The understanding, sympathetic teacher makes an effort to adjust her questions to the level of ability of the youngster to whom the question is directed. When a sincere response is accepted as a positive class contribution, the teacher is, in effect, showing some concern for the individual pupil involved. Unfortunately, teachers have used this kind of questioning skill in a negative sense. All too often, some teachers use special questioning as a means of ridiculing the respondent.

There are, of course, many other teaching skills and instructional modes which lend themselves to the individualization of instruction. Unfortunately the scope of this paper does not permit a more thorough discussion. It is of interest to note, however, that work under way at the Far West Laboratory at Berkeley, California (2) in the development of minicourses holds forth some exciting promises for in-service training of teachers in the use of special teaching skills for the individualization of instruction.

3. Individualizing Instruction Through the Use of Behavioral Objectives

In a sense, the determination of appropriate behavioral objectives for a learner rests upon the teacher's responsibility to discern with accuracy the present level of the individual

pupil under consideration. Levels may be, and usually are, defined in the areas of skills and knowledges. Hopefully, a true concern for individualization will also result in the establishment of behavioral objectives in such vitally important domains as pupil attitudes, feelings, and self-esteem. Subsequently, with knowledge of the present status of the learner, the teacher, in dialogue with the pupils, can develop mutual agreement as to the specific objectives which are to be sought in terms of learning tasks.

Behavioral objectives can be relatively simple, such as, for example, having a primary reader successfully separate from a group of words all those beginning with the letter M. Other more complex objectives, for a more mature learner, might involve the solving of selective types of problems in mathematics at 80 per cent accuracy.

What is most important in the utilization of behavioral objectives is that they must be realistic in terms of the capabilities, interests, and needs of the learner and are mutually agreed upon as being desirable attainments by both the instructor and the learner.

4. Individualization Through Variations in Curriculum Expectation

Unfortunately, in most schools, the curriculum is typically aimed not at individual differences but at types of group differences. So-called "curriculum differentiations" usually

involve the establishment of ability groups which pursue substantially the same curriculum at different rates and in different amounts according to the average, slow, or accelerated nature of the ability group.

There are exciting possibilities for the individualization of instruction through the variation of curriculum expectations for individual children. Perhaps the greatest obstacle to curriculum adaptation to children's individual capabilities, interests and needs is the lack of courage on the part of teachers to make such changes. Why this is so is difficult to understand; there is no substantiation in the literature that a given body of content in such subjects as literature, the social studies, or science is essential to the learning of all children in a school. Perhaps the conditioning of teachers, through the textbooks they use, to a given curriculum for a particular age level of youngsters, has been so successful that teachers make few significant departures from the suggested body of knowledge.

Fundamental to the adaptation of curriculum content to the interest, capabilities and needs of the individual learner is official sanction by the school board for the professional staff to make such curriculum decisions. Even if the school is reluctant to permit its staff to cross content boundaries established for study from one "grade level" to another, teachers still can make decisions within the content which will go far more in the direction of individualizatinn of instruction than

is typical in the traditional school at the present time. In the study of France, for example, at the traditional sixth-grade level, there is little justification for requiring all youngsters to restrict their study to the history and geography of that country. Some of the youngsters might be "turned on" much more effectively if they were permitted and encouraged to study the music or the art or the literature of France.

Suggested guidelines for deviating from a static curriculum to better meet the needs of individual children include some assessment of the present level of achievement of the youngster in the particular subject in question. More importantly, his interests should be ascertained as to what he would like most to study. As a means of further breaking down the "lock-step mentality" which has been engendered among professional educators by the specified grade level content curriculum, it is recommended that interage grouping be utilized in the so-called "content areas" as well as in the "skills areas."

5. Achieving Individualized Instruction Through Variations in Instructional Materials

In recent years the schools have been virtually deluged by the appearance of innumerable new instructional materials and equipment. Some years ago much attention was directed toward the use of such innovative materials in facilitating mass instruction. More recently, attention has been directed toward the use of instructional materials as a means of individualizing instruction.

There is little question but that the many kinds of in-

structional materials now available in the schools do provide exciting, new opportunities for learning for individual children. Such possibilities appear to be limited only by the imagination of the teachers and the pupils whom they instruct. No longer is there an excuse for the youngster who cannot read to sit idly at his desk while awaiting his "turn" with the teacher. Such a youngster can be guided to the school's instructional resource center and provided with single concept filmstrips which will communicate effectively to him the knowledge which is denied him via the usual route in reading. Portable tape recorders provide some excellent opportunities for peer instruction. The capable reader can be provided, for example, an opportunity to record a given story and to evaluate it along with his teacher to see how successfully he has recorded expression, enunciation, and the like. This tape might then be used by a youngster who has difficulty reading as a means of reinforcement by listening to the tape at the same time he is seeking to read the story from the book.

The scope of this paper does not permit further elaboration of the possible uses of instructional materials in individualizing instruction. However, it should be pointed out that many educators point to computer-assisted instruction as promising the only effective means of truly achieving individualization for students. While it is readily apparent, from the present literature that computer-assisted instruction holds forth much promise, extensive use of

computers in such a way is still in the future. Before the computer can be truly programmed to provide for the instructional needs of all children in a given school, much preparation has to be made by using and improving the techniques and resources which are available in the schools. A truly individualized pupil information system simply does not "just appear" in a computer. Such "software," as it has come to be described, only comes about as a result of intensive prior efforts. Once such a pupil information system is available, the computer, upon receipt of pupil progress data, can greatly expedite instruction through prompt feedback of curriculum alternatives for the individual learner.

Major Efforts at Individualization of Instruction

As has been previously mentioned in this paper, major efforts directed toward the improvement of individualized instruction are underway throughout the country. Some of the most important are identified as follows: The University of Pittsburgh, Learning, Research and Development Center's Individually Prescribed Instruction (IPI); the University of Wisconsin's Center for Cognitive Learning, Multiunit Elementary School; The American Institute for Research Project PLAN (Pupil Learning in Accordance to Need); the Nova School in Florida; and the Harvard University approach to Individualized Instruction Through Flexible School Organization reported by Robert Anderson. Also under study and development at the State University College at Fredonia is the Pupil Oriented and Individualized System of Education (POISE Model). The Fredonia model is an eclectic model; it has borrowed ideas from many of the other major approaches to individualization and can be adjusted to the special capabilities and needs of any school.

Basic References Used in Preparation of Paper

1. Anderson, Robert H., and Pavan, Barbara. "Facilitating Individualized Instruction Through Flexible School Organization." Unpublished memorandum. Harvard University, Graduate School of Education, January 26, 1970.

2. Borg, Walter R., and others. The Minicourse - a Micro Teaching Approach to Teacher Education. Beverly Hills, California: MacMillan Educational Services, 1970.

3. Bouchard, John B. "Elements of School Organization Essential to an Effective Program of Early Identification and Prevention of School Dropouts." Unpublished paper from ESEA Title VIII, The Chautauqua Project. USOE Grant No. OEG-0-9-420215-3429(281). State University College at Fredonia, New York, 1969.

4. Carroll, John B. "A Model of School Learning," Teachers College Record. LXIV, (1963), 723-733.

5. Klausmeier, Herbert J.; Morrow, Richard G.; and Walter, James E., "Individually Guided Education in the Multiunit Elementary School - Guidelines for Implementation." Bulletin 9-168. Wisconsin Research and Development Center for Cognitive Learning, the University of Wisconsin, n.d.

6. Klausmeier, Herbert J.; Schwenn, Elizabeth A.; and Lamal, Peter A.; "A System of Individually Guided Motivation." Practical Paper No. 9. Wisconsin Research and Development Center for Cognitive Learning, the University of Wisconsin, 1969.

7. Mitzel, Harold E. "The Impending Instruction Revolution," Phi Delta Kappan LI, No. 8 (April, 1970), 434-439.

8. National Society for the Study of Education. Sixty-first Yearbook, Part I. Individualizing Instruction. Chicago: University of Chicago Press, 1962.

Individualization in Mathematics

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> "A school should serve all its children comfortably and humanely in its on-going child-centered programs and a learning experience should be found to meet the needs of each..." (1).

This seems to express extremely well the need for individualized instruction in the elementary school situation. Since school is almost synonymous with teacher, it is the teacher who will determine the direction and extent of educational reform, though school organization and administration decisions may be a factor.

> "In any field of human endeavor, accepted and applied by those who have the ultimate responsibility for implementing them, changes in education, no matter how sweeping, profound, or ideal, are barren unless they bring about changes in the classrooms; their effectiveness is determined almost entirely by the teacher." (1).

The challenge is unmistakable! The adaptation of an individualized instruction program to the school situation requires the conviction and enthusiasm of the teacher; no strategy is better than the teacher who is using it. As provision is made for the continuous progress of individuals, skill and experience are required to decide just when a child is ready to learn something new. In the area of mathematics, as well as

in others, the individualization of intellectual skills requires determination of what the individual has already achieved in his learning sequence so he may move on to an appropriate task. For example, assessment of understandings of concepts in addition and subtraction must precede progression to multiplication and division. By checking on what the individual already knows, we avoid wasting his time and ours by having him work on inappropriate material whether it be too simple or too advanced for him. A desirable learning climate exists when each child experiences some success each day as he works in an atmosphere which is positive and encouraging, as he is set free to think for himself, as disheartening comparisons are eliminated, and as each child, accepted for himself, is directed and assisted in learning experiences tailored to his needs.

In organizing for mathematics instruction, consideration must be given to several factors: the teacher, the pupils, time, available materials, content, and technique. Space might also be a factor as large and small group or individual instruction are involved. Teachers, within a general framework, usually have control over some of these factors. Considerable initiative may be exercised in: (1) use of instructional materials, (2) grouping pupils for instruction within the class itself, (3) use of time, (4) presenting content - with or without the use of explanatory or inquiry-discovery techniques. Most schools offer considerable latitude in how teachers program performance. Nevertheless, classroom instruction may be significantly affected and perhaps limited by administrative policies which determine basic organizational structure. The ways in which teachers work

will reflect decisions such as faculty organization into teaching teams, emphasis on departmentalized instruction, the way pupils are assigned to the teachers, etc. The system wide or school wide organizational plan (self-contained classroom, non-graded elementary school, dual-progress plan, etc.) is a contributing factor which could limit how the teacher may function. Regardless of administrative policies, the classroom teacher still possesses wide latitude in actually working with his pupils.

The problem of how best to provide for the wide range of mathematical abilities found in the average classroom is of greater importance in today's highly technical world than it has ever been before. Tremendous changes in the elementary mathematics program have occurred during the past decade. The new mathematics education, built upon increasing understanding of learning theory, educational methodology, and mathematics content, presents a sequential spiral approach to content. Differentiated instruction must replace the past mathematics instruction which, characterized by very similar instruction for all pupils, was accompanied by little evidence of individual inquiry or discovery, or adaptation of the curriculum to individual pupil needs.

Individual mathematics instruction is neither a specific method nor any one program. It is the adaptation of mathematics instruction in a manner which fits the particular learner; it is not necessarily different for each learner but certainly is appropriate for the individual. This means the mathematics program must be adjusted to the learner instead of attempting to fit the learner to a pre-determined, inflexible program. These adjustments necessarily concern the educational task, the learner's

behavior, and the teacher's behavior. Individualized instruction in mathematics must be viewed as a means of achieving learning successfully, efficiently, and predictably, rather than as an end in itself. It means we begin where a pupil is able to perform, and move systematically toward better and better academic performance by him within his available capacities. In a sequential spiral approach, this involves a range from easy learning through learnings of increasing difficulty, and in mathematics this might well start with counting and continue with addition, subtraction, multiplication, division, fractions, etc. Also involved is the aspect related to the increasing complexity in the pupil's thinking. From merely showing that he remembers that which he has learned, further steps would have him demonstrate his understanding of such information, apply the information in new situations, use it to solve problems or to initiate ideas by analyzing, synthesizing, and finally evaluating. The teacher can make the task easier or more difficult by a series of decisions.

If education in mathematics is to be truly individualized, then what procedures will assure the most progress in attaining the goal of individualized mathematics instruction for all children? Though the answer to this question has not been ascertained, some steps toward solution have been taken. It is undesirable to ignore current learning theory, but this paper cannot possibly adequately describe the many theories of learning which have been developed. Nevertheless, reference to the research of Jean Piaget seems appropriate since his research of factors which contribute to the intellectual development of a child, and his resultant statements concerning the four main stages of cognitive development are highly supportive of the rationale which recognized the need for

individualized instruction in elementary school mathematics. Piaget's contention that the ability to think logically is developmental, involving stages of development through which each child must go before he reaches the operational or logical level of thought, pinpoints the part of the teacher as a factor in providing necessary opportunities for each child. As teachers consider Piaget's conclusions, the futility of presenting a child with mathematical concepts for which he is not ready becomes apparent, though the teacher can do much to help each one reach the readiness stage.

First it must be determined what mathematical concepts, processes, and facts individual children are ready to learn, and then it is necessary to provide relevant materials in sufficient quantity and variety for this learning to take place. This implies that the classroom provide an atmosphere which encourages resourcefulness, self-confidence, independence, patience, and competence. In such a classroom, children individually or in groups, can meet structured learning situations designed to supply appropriate learning opportunities for each. In the area of elementary mathematics, the teacher must possess the skills, information, and materials necessary to guide each child to learning opportunities which are within the child's known capabilities. As such opportunities are provided, progress is being made toward attaining the goal of individualized instruction for all children. However, E. Glenadine Gibbs (3) feels that certain crucial problems which have confronted mathematics educators throughout the years need resolving if such instruction is to become a reality. Her listing of these problems together with some related considerations as follows:

"1. Can agreement be reached as to what mathematical understandings, skills, and competencies are required in mathematics? If so, can these goals be stated in terms of learning behaviors in such a way as to avoid substituting memorization for in-depth learning?

2. How can one provide the stimulation of thought and cognitive growth in mathematics of each student by asking the 'right' questions at the 'right' time?

3. Can research be designed so as to contribute knowledge concerning how children develop mathematical concepts and skills? Certainly, more knowledge is needed about ways to identify learning styles, aptitudes, and interests of individual children, and about how to identify components of an individual learning style.

4. What instructional strategies can and should be employed in order to predict with confidence that children will develop the abilities to think independently, to make choices, to plan, and to evaluate? Furthermore, can instructional strategies be designed to match with individual learning styles and individual learning potential? Can the curriculum be adapted to the needs of students, instead of students being adapted to fit the curriculum?

5. Is it possible to design suitable materials and at the same time not make the 'package' so expensive that their use is prohibitive? Through the years the lack of appropriate materials has been noted as a handicap in moving toward individualized instruction programs.

6. Can the instructional programs of our schools provide guidance for the administrative organization and structure of our school buildings rather than be restricted because of them?

7. What changes must be made in teacher-education programs to truly prepare prospective and experienced teachers to assume their responsibilities in the career they have chosen? Can plans be implemented so that the aptitudes, interests, capabilities, and learning styles of adults can be used to maximize each individual's potential as a teacher of children?

> Repeatedly, deficiencies in the teacher's education to teach mathematics have been highlighted as a barrier in implementing improved programs in mathematics. Obviously, efforts to effectively individualize instruction are dependent upon the teacher, who likely has never experienced professional preparation in the individualization of instruction. Just as materials, planning, organization, and opportunity are needed in the schools, these same needs exist in teacher-education programs. Each teacher must be prepared to accept his responsibility both as an individual and as a member of a group."

An examination of these areas of general concern, as expressed by Gibbs, emphasizes that much remains to be done if both children and teachers are to realize their full capacities. However, the renewal of individualized instruction in the decade of the sixties did bring to the forefront several needs; basically these: (1) the need to define objectives and to state them in behavioral or performance terms; (2) the need to develop premeasurement, postmeasurement, and assessment devices for monitoring progress in the attainment of each objective; and (3) the need for procedures for planning each individual's mathematical program in terms of learning objectives of selected mathematics programs. Presently, projects and programs such as Comprehensive School Mathematics Program (CSMP), The Program for Learning in Accordance with Needs (PLAN), Individually Prescribed Instruction (IPI), Computer-assisted Instruction (CAI), and various other projects, including local school efforts, are being employed to individualize instruction in mathematics and identify the objectives for such instruction.

For teachers, as the previously enumerated efforts are evaluated, it appears that certain major goals must be formulated and briefly stated. There are three which seem to be necessary and sufficient for the purposes of mathematics education. The first is that children learn to read mathematics, that is learn the fundamental concepts that are basic to the

understanding of the subject, the "why" of mathematics - why it works the way it does - what each idea means. Secondly, children must be able to do mathematics, to develop skill in handling mathematical symbols and concepts so as to obtain increasingly mature performances. Thirdly, children must develop the ability to solve problems. In order to achieve these goals, we must enable each child to bring to a situation all the concepts and skills he has already learned, together with an awareness of the new elements in the situation, and an organizational ability so that he can use this knowledge to solve the problem under consideration.

Realization of these stated goals may seem remote, but progress will be made as each teacher makes a beginning; as she plans for personalized instruction, as she grows in skill in diagnosing the status of individuals, in identifying specific pupil needs, in providing guidance for further procedures, and in adapting materials appropriate to each child. Child development studies show conclusively that pupils of a given age begin with different skills and aptitudes, progress at different speeds, and achieve at different levels. This is not new information for teachers, but use of such information requires each teacher to accept as his responsibility certain activities required to help each child to develop and maintain his maximum stride. Progress toward the ideal of truly individual instruction for all children will be made only as each teacher accepts responsibility and adjusts his teaching strategies in appropriate ways.

Bibliography

1. The Provincial Committee on Aims and Objectives of Education in the Schools of Ontario, "Living and Learning." (Toronto, The Publications Office, Ontario Department of Education, 1968), 55, 121.

2. E. Glenadine Gibbs, "Through the Years: Individualizing Instruction in Mathematics," The Arithmetic Teacher, XVII (May, 1970), 400-401.

Differentiated Staffing in the POISE Model

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More than ever before, increasing and conflicting demands are being directed at the educational system to produce individuals who can function "satisfactorily" in our burgeoning technological milieu. The problems that face society today make it increasingly vital that the educational system produce thinking individuals. It appears inevitable that a restructuring of the organizational framework of the schools take place in order to meet the aforementioned demands.

It is the philosophy of this institution (TERC and the SWNY Association) that the preparation of our youth to function in our society can best be accomplished through various systems of individualized education. In addition, it is felt that individual treatment of pupils and instructional staff can be facilitated through certain concepts and practices inherent in differentiated staffing. Thus, differentiated staffing is here discussed as one important ingredient in the development of the model(s) for individualized treatment of students as well as staff personnel.

The "traditional" organizational structure with its self-contained classrooms, single salary scale, rigid pupil-teacher ratios, and the like, holds little promise for accommodating the new demands being placed on the schools; the individual (isolated) classroom teacher is unable to cope with or capitalize upon the variability of all the children assigned to her (him). The flexible structure offered through differentiated staffing has the potential of freeing both the staff and the children to decide among a wider array of educational alternatives. They will therefore be able to pursue their own unique needs and interests.

A Definition of Differentiated Staffing

Differentiated staffing is an extension of a basic bureaucratic (sociological) principle: division of labor. In essence, differentiated staffing breaks the teaching role into component parts with each component representing a specific stage of professional development or competence. Each role carries with it certain specific duties associated with the teaching tasks and/or other professional and nonprofessional functions to be weighted and ranked according to degree of difficulty, intricacy, and responsibility. Each teacher in a unit thus assumes tasks which are most appropriate to her (his) professional developmental level.

To summarize, differentiated staffing may be defined as a plan for recruitment, preparation, induction, and continuing education of staff personnel for the schools that would bring a much broader range of manpower to education than is now available. Such arrangements will not only facilitate individual professional development to prepare for increased expertise and responsibility of teachers but will also be supportive of procedures which insure the individual treatment of children

as they progress through the instructional process. Differentiated staffing is therefore viewed as a plan for stimulating the educational growth of pupils and staff alike.

Some Characteristics of a Differentiated Staff

Differentiated staffing is similar to its prototype, viz., team teaching, in that it allows for the assignment of teams of teachers to pools of students. The most obvious differences are: (1) differentiated staffing assigns distinct roles and responsibilities to each team member, and (2) differentiated staffing remunerates each staff member according to a defined level of professional competence. The present state of the art is such that the two characteristics listed above are evident in theory more often than in practice. However, progress is being made in working out the details of role differentiation and appropriate remuneration for levels of professional competency. For the purpose of this paper, the position is taken that much of the detail of developing a differentiated staff, in actual practice, must evolve from the unique situation in question. With this in mind, the following gross role classifications are offered.[1]

The Principal is an integral part of the Basic Unit Instructional Team. His most important responsibility is to provide leadership in curriculum decisions and instruction. Where a school contains both the Basic POISE Unit and the traditional self-contained classrooms, he will have the responsibility of coordinating the differing demands of both

[1] The following position descriptions relate to the POISE Model (Pupil Oriented and Individualized Systems of Education) and are the work of Dr. J. B. Bouchard, SUC, Fredonia, New York.

types of organization on the school's facilities and resources. Where an entire school program is organized as a POISE Model, he will have the responsibility of coordinating the differing demands of both types of organization on the school's facilities and resources. Where an entire school program is organized as a POISE Model, he will have the responsibility of coordinating the efforts of Unit Leaders within his school and communicating the school's efforts to appropriate systemwide authorities.

The Unit Leader is directly responsible for the planning and implementation of the learning-experiences to be provided by his instructional team for the children enrolled in the Basic Unit. This professional leader has approximately half-time teaching responsibilities and is also provided release time for planning. To avoid possible conflict with the Principal's leadership status in the school, it appears to be important that no administrative authority over personnel be assigned to the Unit Leader. In recognition of the additional responsibilities such an individual assumes, however, it seems appropriate to suggest extra compensation for the Unit Leader.

Teachers. Appropriately certified teachers should be available as members of the instructional team in a ratio of approximately one teacher to every twenty-five pupils enrolled in the Basic Unit. At the elementary school level, the instructional team will be drawn from teachers normally assigned to self-contained classrooms. At the secondary level the instructional team will include those teachers normally assigned to classes serving the students now enrolled in the Basic Unit.

Also included on the instructional team are the professional staff members typically described as "special" teachers in the traditional school organization (e.g., music, physical education, art, etc.).

Each teacher-member of the instructional team should assign highest priority to the responsibility for providing, in accordance with his special talents and capabilities, individualized instruction to some or all of the pupils assigned to the Basic Unit. Other professional responsibilities include participation in the cooperative planning of the instructional program and discharging an appropriate share of the professional obligation identified as a result of such planning.

Special Non-Professional Aides. Two special non-professional assistants are suggested to enhance the operation of the instructional team; these are the clerical aide and the instructional materials aide. There appears to be little question but that the successful operation of the Basic Unit will require substantial increases over the operation of a traditional school program in such services as preparation of lesson plans and daily schedules and the identification, procurement, use, and return of differentiated instructional materials.

It is recognized that in some schools such factors as size of the instructional team due to generous teacher-pupil ratios and the ready availability of school clerical services may appear to minimize the need for non-professional aides. It is suggested, however, that careful consideration be given to the appointment of both a clerical assistant and an instructional media assistant to every Basic Unit on the grounds that such aides permit the teacher members of the instructional team to

concentrate their time and effort on the professional tasks of planning and instruction.

Other Members of the Instructional Team. It is considered essential that arrangements be made to provide systematic and continuous college or university consultative services to members of the instructional team. Such consultants should be thoroughly familiar with the POISE Program and be prepared to render such assistance as the following: continuous evaluation of the operational success of the model; in-service education programs; guidance in curriculum development; identification, procurement, the use of newly developed instructional materials for the individualization of instruction.

Analyses of the particular programs in given schools will reveal additional personnel needs to accomplish the objectives of special programs. Typical additional needs will include special resource personnel from community agencies and the use of mature students enrolled in the school as special tutors of younger and less advanced children.

The following chart contrasts the functional alternatives which may evolve through differentiated staffing as compared to the role of the self-contained classroom teacher.

THE ROLE OF TEACHER

Self-contained Classroom Teacher	A Differentiated Staff		
Specialist at Everything (assumed)	Instructional Specialties	Assessment Specialties	Motivational Specialties
Pre-assessment Planning Diagnosis Instruction Prescription Assessment-Evaluation	Planning: a. Large group b. Small group c. 1 to 1 d. Peer tutor e. Other	Assess independence levels Assess capabilities of staff and pupils Assess needs of staff and pupils Assess interests of staff and pupils	Establish "best fit" of teacher talent and pupil needs and interests

Implementing Differentiated Staffing: A Note to Administrators

In order to assess and predict the degree to which differentiated staffing can be implemented in any school system, it is necessary to consider the school as a social system. The concept of role is an integral component of systems theory. Differentiated staffing proposes to alter roles within the school organization (social system). In other words, in order to have a career ladder within the position of teacher, there must be a restructuring of certain rights and obligations attached to the role of teacher. This change will also necessarily affect the role of principal as it now stands.

The degree to which any actor in the organization may be expected to accept a new and different set of tasks or duties may be determined by his perception of his chances for social, psychological, or remunerative gain within the organization. Actually, role change will ordinarily not be accepted if the new requirements (role expectations) depart considerably from the norms operating within the group. Thus, it behooves policy makers to be aware of group norms. This does not mean that those in authority are passive followers of group norms, it only means that "administrators" do not carry unconditional power to do as they would like, especially in the educational organization. This also means that policy makers do not need consensus even though they do need to exert policy change well within the limits set up by group norms. For that matter, it would probably be difficult for policy makers to get consensus on existing policy.

It is imperative that policy makers have adequate information about the norms and values of the group (educational staff) and, implicitly about the attitudes of the group. For example, Foskett found that elementary teachers perceived the community to be more rigid in its expectations of their behavior than was actually true.

> To the extent teachers are constrained in their behavior as a consequence of the alleged rigidity, they are being constrained by something that actually does not exist. A further consequence may be that the effectiveness of teachers is impaired by the fiction of non-permissiveness. In turn, this could be a factor in educational innovation.[1]

It is further noted that information is needed about group role-performance. Policy makers must be aware of present organizational roles before they can adequately plan for the reconstruction or reordering of those roles. Some caution is needed here because if authorities try to keep informed about details of role-performance to an extent that exceeds the normative expectations of members of the group, this will be met with resistance and expressed opposition. It would seem most advisable that efforts to observe group role-performance be the result of mutual understandings with regard to attainment of common educational goals. Thus the observation procedures may not as often be perceived as an "invasion of privacy."

It is contended that implementation of a model(s) of differentiated staffing must be based on general staff involvement and endorsement with the full knowledge that consensus will be unattainable and in most instances, unnecessary.

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[1]John M. Foskett, The Normative World of the Elementary Teacher, Center for the Advanced Study of Educational Administration, University of Oregon, 1967, pp. 82-86.

Motivational Procedures in the Individualization of Instruction

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Motivation is of particular significance to the classroom teacher as it helps in the selection, direction, integration, magnitude, and persistence of a child's steps in learning. Though it is true that the child is the principal agent in his own education and mental growth, yet it is too often true that many children apathetically go through the motions of participating in class activities without any real or lasting learnings. It is at this point in the teaching-learning process that teachers badly need to know, understand, and use certain motivational procedures that inspire children.

It is the contention of this paper that a low level of motivation is the number one learning problem for children in the classes of most teachers at all levels in our schools as pointed out by many writers (e.g., 5, 15). Yet, this is one area of teaching in which many teachers seem to be inadequately equipped. This is, in part, due to the conflicting and impractical concepts and theories on motivation and, in part, due to the fact that the teacher tries to tackle the problem on a group basis.

It is the contention of this paper that an individualized system of learning provides special opportunities to deal with motivational factors in ways that will maximize learning and, therefore, a system of individualized motivation must be built into any program of individualized education (12), so that members of differentiated staff in elementary schools can utilize it. The essential characteristics of such a system as adapted from Klausmeier, et. al. (12) are:

1. the identification of specific behaviors that are indicative of motivation
2. the identification of students who are motivated and who are not motivated
3. the identification of reward preferences of students
4. the understanding and use of motivational practices
5. the carrying out of evaluation to determine the effectiveness of the above four steps in a classroom situation
6. the use of the results of this evaluation to improve the procedures.

These are discussed below. It may be pointed out that this paper does not attempt to summarize or reconcile the research or scholarly writings on motivation. Instead, it suggests some effective and practical procedures which teachers can undertake regarding motivation in an individualized instructional setting.

1. Specific Behaviors. As behavior is determined not only by motivation but also by the present situation and past experience, it is difficult and, at times, misleading to infer motivation from behavior. This implies that we can accurately infer motivation from behavior only if we know a person's past experience and can control the situation in which he finds himself. However, Klausmeier, et. al. (12) have suggested a tentative list of behaviors that are indicative of motivation. This list consists of four general objectives along with specific behaviors related to each objective. Also, it should be noted here that this is a tentative and beginning list and that teachers may hold certain other behaviors equally important. The four behaviors indicative of motivation are:

   a. "The student starts promptly and completes self-, teacher-, or group-assigned tasks that together comprise the minimum requirements related to various curriculum areas.

      (1) Attends to the teacher and other situational elements when attention is required.
      (2) Begins tasks promptly.
      (3) Seeks feedback concerning performance on tasks.
      (4) Returns to tasks voluntarily after interruption or initial lack of progress.
      (5) Persists at tasks until completed.

   b. The student assumes responsibility for learning more than the minimum requirements without teacher guidance during school hours and outside school hours. In addition to Behaviors 1-5, the student:

      (6) Continues working when the teacher leaves the room.
      (7) Does additional work during school hours.
      (8) Works on school-related activities outside school hours.
      (9) Identifies activities that are relevant for class projects.
      (10) Seeks suggestions for going beyond minimum amount or quality of work.

c. The student behaves in accordance with the school's policies and practices in connection with use of property, relations with other students, and relations with adults.

(11) Moves quietly within and about the school building during quiet periods and activities.
(12) Interacts harmoniously with other students.
(13) Interacts harmoniously with the teacher and other adults.
(14) Conserves own and other's property.
(15) Tells other students to behave in accordance with school policies.

d. The student verbalizes a value system consistent with the preceding behaviors.

(16) When asked, gives examples of his own actions illustrative of Behaviors 1-15.
(17) When asked, gives reasons for manifesting Behaviors 1-15."

2. Identification of Students. As in many other human traits, individual differences in motivation also exist. There may be many children who are highly motivated and do not require additional rewards. Indeed, there are many overly motivated youngsters who are under too much pressure to succeed. However, there are other children who do not want to learn or to behave in accordance with generally accepted rules; these children require an individualized application of reinforcers for learning and conduct. Therefore, it may be profitable for members of a differentiated staff to assess each pupil on the motivational behaviors (see page 76). Such an assessment can then be used as a basis for small group discussion or individual conferences with pupils as found necessary. Also, pupils may be asked to attempt self-assessment (see page 77) of these behaviors. Interesting differences in teacher and self assessments may become apparent. As a result of these assessments it may be profitable to single out particular pupils for special attention and treatment.

3. Identification of Reward Preferences. It quite often happens that some students do not manifest the behaviors even after persistent teacher effort. This may be due to the fact that these students are not being rewarded for desired behaviors with their most preferred type of reinforcements (4). Thus, after assessing the motivational level of the learner, it is important to determine the learner's reward preference in advance of instruction, group discussion, or individual conference. Such a step would save teachers unnecessary labor.

4. Motivational Practices. Some of the strategies and procedures suggested are as under:

   a. Goal Setting. Instructional goals and objectives are normally specified by teachers for a group of children and the individual child is usually not given an opportunity to participate in this goal setting. It cannot be assumed, however, that the individual child has not participated in this goal setting. In truth, he may have in his own mind established a goal for himself at some variance with that attempted by the teacher. It is because of this that instructional goals as well as social goals must be cooperatively established by pupils and staff and in many cases, parents. Self involvement will result in greater effort, greater understanding, and greater enjoyment and progress toward goals. It has been pointed out that much of the problem of motivating the child will disappear if we learn to bridge the gap between those things which he should and those things he wants

to learn (17). Conversely, if the student is made to do things which the teacher thinks the student should learn, the teacher will have to use coercion, artificial incentives and endless repetitions but all of no avail. However, children vary widely in their ability to establish realistic goals. While the more able children can be expected to set attainable goals, the disadvantaged children or the slow learning children, because of their fear of failure and their lack of practice in goal setting, normally need a lot of help in establishing realistic goals. For this group of children, goals may be set either on a small group basis or on individual basis. However, it has been the experience of many of the Wisconsin Multiunit schools that each child should receive the undivided attention of an educational worker for at least ten minutes per week in an individual conference. In addition to the goals setting purpose of this conference, as assessment of progress made toward educational and social goals can be carried on. Not only should students participate in the establishment of realistic, attainable, and worthy goals but also they must participate in establishing the nature and order of this learning. Thus, to outline the task clearly and understandably would seem to be one of the most important motivational tools because such a step would guide the teacher in his teaching and the learner in his learning. With such meaningful tasks the learner provides his own reinforcement.

However, this does not mean to let children do anything

they want to do, and teachers must discourage "purely random activity."

Incidentally, the goal setting process can also help in identifying the students who are not motivated toward the goals of the school. Such an inference is made from the goals a student selects.

b. Prompt Feedback. According to our presently accepted learning concepts, prompt feedback is another useful motivational procedure. Instructional feedback can be defined as a process of providing a learner with information after responding, or during a series of responses, concerning the correctness or adequacy of the response. Too often, in our present school situation, learners do not know about the adequacy of their responses until after they have answered questions on some kind of a test and perhaps days afterward have found out whether their responses were correct or incorrect. In some cases, learners may not know the correctness or incorrectness of their responses and may simply be given a grade. Delayed feedback or no feedback result in slow rate of learning and interferes with effective learning (7). Feedback, therefore, is very useful in redirecting the learners' performance as it identifies areas in need of further practice and spells out how much of a correction is needed. In elementary schools, a very common way for providing this feedback is the procedure of recitation which usually includes going from child to child, getting responses, and informing

the child about the correctness and incorrectness of responses. Systems of individualization, which involve differentiated staff assignments, plus a variety of instructional modes, provide far better means of giving the learner prompt and effective feedback concerning the adequacy of specific responses. In individualized systems of instruction the staff typically provides feedback by working with small homogeneous groups or individuals; instructional aids or peers are often used for various kinds of drill. Auto instructional (18) or programmed materials also provide quick feedback for individual learners; eventually computers will enable us to handle many of the drill subjects and thus provide almost immediate feedback to the learner regarding his responses.

c. Peer Tutoring. This means having one student teach another student or a very small group of students. It is felt that this technique has a strong motivational potential for less able and older students whose behavior and attitude toward their schooling can be favorably modified through this involvement. This, in turn, will effect a very real change in the educational climate of the school. In terms of immediate benefits to instruction, the student that is being helped gets help from a person who more or less talks his language and may have had the same kind of problem he is encountering. In carrying out this kind of tutoring, attention needs to be paid to the selection of compatible peers and training of peer tutors in the use of appropriate reward and reinforcement procedures. Both children should be informed in advance concerning

days, times, and places for the meeting. The older child should be encouraged to serve as a model for desirable behavior and listen to the student being tutored in order to find out the student's problems. It should be emphasized to him that his task, after identification of the problem, is not to give the answer but to help the student to work through the general method with him, so that the student can go on from this lack of understanding and ability to solve the problem to mastery of the general procedure and the mastery to solve the problem on his own. A number of studies (12, 13) have shown that the use of less able and older students as tutors of younger children showed encouraging results for both children.

d. Utilizing Rewards/Punishment. Reinforcement is one of the conditions considered essential in learning among most learning experts. Most human learning research (1, 16, 19) has indicated that immediate reinforcement facilitated concept attainment and that delays were detrimental.

Writers agree that attempts to predict the effect of rewards and/or punishment must take into account a definition of the kind of student or pupil that we are talking about. Thus, awareness of the personal and social needs for the learner, as well as his characteristic response pattern to this kind of motivation, is necessary. Rewards or positive incentives include: (1) adult approval or praise. Research has shown praise as a motivational device to be superior to reproof which in turn,

tends to be more effective than no comment (10). However, care should be taken that such an approval or praise should not have any adverse effect on the pupils peer status. We have all noted such instances as rejection of a so-called "teacher's pet."

(2) actual tokens for excellence exchangeable for candy, cokes, or other wanted objects at significant places in the program

(3) peer approval

(4) feeling of success as it leads to the development of a positive self-concept, and hence to further success and further motivation (19)

(5) competitive situations in which pupils are given evidence of the superiority or inferiority of their performance as compared to others. This is a powerful incentive since it brings the full force of group pressure to bear upon the learner. However, individual competition tends to be more effective than group rivalry (11). Also, these extrinsic incentives should not be emphasized to the point where they supersede the real goals and provide rather convincing evidence that the activity is not worthwhile apart from the incentive. This point has been argued very convincingly by many writers (3, 20).

Most writers advise teachers to use positive reinforcement, or the withholding of approval rather than the more punitive threat of disapproval or punishment. However, it must be remembered that each pupil is a different individual and a reinforcement technique which works well for a number of pupils may fail with others. There are many times when punishment may need to be required; some maladaptive behaviors of children are much worse than

the punishment it takes to eliminate them. In the study by Penny and Lupton (18), a combination of reward and punishment was found to be more effective than either reward or punishment alone.

e. Social Reinforcement. The classroom is a social group and social reinforcement in such a setting is the teacher's greatest ally in motivating children. It is suggested that the classroom atmosphere should be that of shared feelings of "liking" or "love" so as to lead students to maximum growth.

f. Behavior of Teachers. This, in the final analysis, is the key to motivation. It has been said that we know how to discourage; we find it easy to criticize but, when faced with the need to encourage, we are clumsy and end up doing the opposite (6). Also, the nagging teacher who, in an attempt to reward behavior by praising it, inadvertently also punishes by accusing the child of not having made the correct response in the past (9). In a recent Carnegie study, Silberman (21) asserts that teachers assume that pupils cannot be trusted to act in their own best interests and suggests that there should be a much more informal atmosphere in classrooms. It is argued that in such an atmosphere disciplinary and motivational problems largely disappear and that there is "great joy and spontaneity and activity" coupled with "great self-control and order." Therefore, it would be useful for teachers to select and develop a variety of verbal response skills that can be used in appropriate situations to elicit

desired pupil behavior. As the development of these skills requires practice and does not come by merely reading, talking, and thinking, it is suggested that the teacher should make use of a mirror and tape recorder in developing them. After patient practice in role playing, the teacher, it is hoped, will notice exciting new skill in the development of responses. Also, micro-teaching procedures can be helpful (e.g., The Far West Laboratory's Minicourse V, tutoring skills which provide opportunity for practice in praising skills). Sometimes a teacher may choose to practice with another person who desires to be helpful in giving the teacher appropriate feedback. Other than subject matter itself, responses available to the teacher can be classified in the following five categories (19):

(1) words (spoken-written) e.g., good, nice, bravo, well done

(2) physical expressions (facial-bodily) e.g., smiling, cheering, nodding

(3) closeness (nearness-touching) e.g., patting back, leaning over, tickling

(4) activities (social-individual) e.g., displaying a student's work, decorating classroom, making a game of subject matter, and,

(5) things (materials, food, playthings, awards) e.g., book covers, candy, dolls.

The examples cited in the above five categories are approval responses. A similar list of examples of disapproval responses can be given. However, it is suggested that the teacher use approval responses as the

research investigating the effects of various disapproval responses and threatening words finds that the individual exhibits greater emotional imbalance and lack of meaningful understanding under such situations.

g. Manipulating Environment. It has been found that new, unfamiliar and complex objects and events direct the attention of the individual towards them. Similarly, if the environment contains objects and situations which differ markedly from the individual's prior experience, the individual tries to explore the environment in order to gain knowledge about and control over it. However, there is a limit to the number and kind of stimuli to achieve optimal results. If the amount of stimulation is below the optimal level, the individual strives to learn about the environment and if, on the other hand, the stimulation is above the optimal level, the individual strives to decrease stimulation instead of increasing knowledge about environment. Klausmeier and his associates feel that it is possible for a school staff to arrange its environment so that students become habitually curious and desire to become increasingly competent in connection with learning tasks in and out of school.

h. Use of Models. A number of researchers have found that children observe and imitate that behavior of models which has been rewarded. It is, therefore, suggested that the use of models can be made for the acquisition and retention of a

desirable behavior. However, care should be taken in the selection of the model. The model should not only exhibit the desirable behavior but also should be influential, powerful, competent, and prestigious in the eyes of the observer. Models need not be always real-life. They can be symbolic or representational. In the school setting, teachers and other members of the instructional staff are potential models. Use should be made of community resources to provide models for children to imitate.

i. Use of Interest-centered Activities. The teacher, by dividing the classroom into well planned interest centers, ensures that children encounter refreshing experiences and pursue independent work. Such activities will provide truly individualized learning developing from each child's particular interests.

j. Use of Discussions. Discussing the objectives and performance with each student or among students is a useful motivational procedure. Discussing "why" of the behavior by the student will give the child an opportunity to verbalize and the teacher a chance to know whether the child understands and gives reasons for his behavior. Such a continuous examining, it is hoped, will contribute towards vim and vigor.

BIBLIOGRAPHY

1. Angell, George W. "The effect of immediate knowledge of results on final examination scores in freshman chemistry." Journal of Educational Research, 42, 1949, 391-394.

2. Berlyne, Daniel E. Conflict, arousal, and curiosity. McGraw-Hill, 1960.

3. Bruner, Jerome S. "The act of discovery." Harvard Educ. Rev., 31, 1961, 21-32.

4. Cartwright, C.A., and Cartwright, G.P. Reward preference profiles of elementary school children, mimeographed. Computer-Assisted Instruction Laboratory, The Pennsylvania State University, 1969.

5. Davis, Robert A. "The teaching problems of 1075 public school teachers." Journal of Experimental Education, 9, 1940, 41-60.

6. Dreikurs, Rudolf. Psychology in the classroom. New York: Harper and Row, Publishers, Inc., 1957.

7. Fairbanks, G., and Guttman, N. "Effects of delayed auditory feedback upon articulation." J. speech hear. Res., 1, 1958, 1-11.

8. Fleming, J. Carl. "Pupil tutors and tutees learn together." Today's Education. October, 1969.

9. Gordon, Jesse. Personality and behavior. New York: Crowell-Collier and Macmillan, Inc., 1963.

10. Hurlock, Elizabeth B. "An evaluation of certain incentives used in school work." Journal of Educational Psychology, 16, 1925, 149-159.

11. Jersild, Arthur T. Child Psychology. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960.

12. Klausmeier, H.J. et. al., A system of individually guided motivation. Madison: Wisconsin. February, 1969.

13. Lindvall, Mauritz. An address to the chief school officers of Chautauqua County in Jamestown, New York, October 6, 1969.

14. Madsen, Charles H. Jr. and Madsen, Clifford K. Teaching/Discipline. Boston: Allyn and Bacon, Inc., 1970.

15. McConnell, T.R. "Learning." In A.I. Gates, et. al., Educational Psychology, Part III. New York: Crowell-Collier and Macmillan, Inc., 1948.

16. Meyer, Susan R. "A test of the principles of 'activity', 'immediate reinforcement', and 'guidance' - as instrumented by Skinner's teaching machine." Doctoral dissertation. University of Buffalo, 1960.

17. Neugarten, Bernice, and Nelle Wright. "Encouraging the child's spontaneous interests." In Fostering Mental Health in Our Schools. Washington, D.C.: Association for Supervision and Curriculum Development. 1950. Pp. 134-145.

18. Penny, R.K., and A.A. Lupton. "Children's discrimination learning as a function of reward and punishment." Journal of comp. physiol. Psychology, 54, 1961, 449-451.

19. Postman, Leo, and Bruner, J.S. "Perception under stress." Psychological Review, 5[illegible], 1948, 314-323.

20. Pressey, Sidney L. "Autoinstruction: perspectives, problems, potentials." In E.R. Hilgard (Ed.), Theories of Learning and Instruction. 63rd Yearbook, National Society for the Study of Education, Pt. I. Chicago: University of Chicago Press. Pp. 354-370.

21. Sax, Gilbert. "Concept acquisition as a function of differing schedules and delays of reinforcement." Journal of Educational Psychology, 51, 1960, 32-36.

22. Sanford, Filmore H. Psychology: a scientific study of man. Belmont, Calif.: Wadsworth Publishing Co., Inc., 1961.

23. Silberman, Charles E. Crisis in the Classroom. New York: Random House, 1970.

Assessment Sheet of Positive Terminal Behavior

Name _____ Sex _____ Age _____

Date _____

	Seldom	Some-times	Most Times
1. Listens to the teacher.			
2. Begins school work promptly.			
3. Corrects mistakes.			
4. Works until the job is finished.			
5. Works when the teacher has left the room.			
6. If mistakes are made, still continues to work.			
7. Arrives at class on time.			
8. Works on learning activities in free time.			
9. Does extra school work.			
10. Participates in class projects.			
11. Reads during free time.			
12. Asks questions about school work.			
13. Has pencil and paper ready when it is needed.			
14. Moves quietly to and from my classes.			
15. Listens to the ideas of others.			
16. Helps classmates with their problems.			
17. Picks up when the work is finished.			
18. Takes good care of his clothing, books, and other things.			
19. Takes good care of the school's books, desk, and other things.			
20. Does what the teacher asks.			

Self-Assessment Sheet Of

Positive Terminal Behavior

Name _____ Sex _____ Age _____

Date _____

	Seldom	Some-times	Most times
1. I listen to the teacher.			
2. I begin school work promptly.			
3. I correct mistakes.			
4. I work until the job is finished.			
5. I work when the teacher has left the room.			
6. If I make mistakes, I still continue to work.			
7. I arrive at class on time.			
8. I work on learning activi es in free time.			
9. I do extra school work.			
10. I participate in class projects.			
11. I read during free time.			
12. I ask questions about school work.			
13. I have pencil and paper ready when it is needed.			
14. I move quietly to and from my classes.			
15. I listen to the ideas of others.			
16. I help my classmates with their problems.			
17. I pick up when the work is finished.			
18. I take good care of my clothing, books, and other things.			
19. I take good care of the school's books, desks, and other things.			
20. I do what the teacher asks me.			

Organization for Individualization

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This paper will discuss the topic "Effective Organizational Systems for the Individualization of Instruction." The dilemma of educational organization is how to relate people, space, subject matter, resources and time. These are the essential components of organization. Decisions need to be made to determine the relationships between teachers and students. How teachers can be used most effectively in providing instruction is one of the most important decisions made in the school. The traditional use of staff has been challenged in today's schools and, as a result, the study of differentiated staffing is currently a matter of great interest.

In addition to student-instructor relationships, there still are many other elements to be organized. Space is one of these. Where will the students' and teacher's desks be placed? Where will the reading circle be formed? If chairs are arranged in nice neat rows this will have some implications for instruction. Other arrangements for seating favor different approaches to instruction - through grouping of pupils. Next, there is subject matter. Subject matter must be organized so that important objectives can be identified by the teacher and student. The time available for learning and instruction must also be considered. These are all elements that may be manipulated through organization. Teachers continually manipulate these components. But many have different

attitudes about their competencies for organization. In summary, school organization is an essential planning activity that facilitates patterns of instructional activity with reference to use of people, space, time, material, and subject matter.

To logically make organizational decisions requires an understanding of the foundations of education. These are areas of human knowledge and experience. The foundations of education include philosophy, psychology, biology, sociology and other disciplines - even the culture itself. Values are derived from the social culture and from philosophy and religion. Psychology and biology provide educational insight about human development and growth processes. The child's physical status alone has some implications as to what he can do. For example, in physical education pre-schoolers are not expected to climb ropes. How a child or any person learns is derived from studies in psychology. For example, psychology provides understanding that pre-schoolers have unique concepts of space and time. These have implications for organization in the placement of subject matter content. Sociology reveals that learning is also a social process. Every person comes out of a social mix which influences his behavior. The whole popularized concept of a "middle class" social system, as contrasted with that of the socially deprived or migrant, is different in many ways. For example, each "class" has different value systems which are related to a complex of actions or attitudes. As a consequence, the ghetto negro child may have a different attitude toward stealing, sex, and lying than

his classmates from affluent homes. An effective organizational plan must recognize and provide for such differences.

Ten or twenty years ago the focus of education was subject matter. It was hypothesized that there were certain desirable developmental processes or ways of generating knowledge and that children ought to go through these processes. Today concern is expressed about individuality of pupils and accountability of the school. Assuredly a new mix of values and subject matter is responsible for this change and its implications for organization.

A careful examination of the foundations provides direction for individualization. Philosophically, our nation has a tradition of concern for the uniqueness and the importance of the individual. That each individual is indeed different in many ways is also supported by evidence from psychology and biology. The program of instruction for which society holds the school responsible provides an endless reservoir of possibilities for individual approaches to study and learning. It must be recognized, however, that "justification" for almost any organizational plan can be found. For example, the concept of the self-contained classroom can be supported by reference to the literature in psychology and sociology. Several assumptions usually made about the self-contained classroom are: the teacher should be the primary decision-maker for less mature children; children of about the same age may profit through instruction geared to meet average needs; elementary children need a warm, continuing sort of relationship with one teacher; and, utilizing available time and space, growth can best occur in one classroom with one teacher.

Another organizational example may be found in high schools using modular schedules. Modular scheduling is based upon staff specialization. In addition to departmentalization of instruction it is assumed that learning rates of pupils are different enough to require manipulation of time. Modular scheduling also usually requires a resource center for independent student activity. Also, a variety of instructional alternatives may become available through an open building constructed for a variety of large and small groups. In short, once direction has been given to a form of organization by selection of particular values, a whole sequence of additional changes are likely to follow.

Team teaching may be similarly examined with respect to the assumptions derived from educational foundations. Critical to team teaching is the belief that children have both unique and common needs that are best met through the competencies of a team of instructors. An assumption of team teaching is that students can be identified whose needs can be met in a large group. Anywhere from fifty to one hundred and twenty-five children can form this group. The instructional team is a group of teachers with different kinds of skills. The kinds of experiences that teams of collaborating teachers can bring to students is increased. Since each teacher's role in decision-making is shared in the instructional unit, decisions are made by the team every day as to where Johnny can be most productive. With respect to time, students and teachers may decide that one group needs fifty minutes for instruction and another group needs one hundred minutes. Furthermore, teachers can make deci-

sions on a day-by-day basis to ensure flexible use of resources. Through such planning, the subject matter objectives can be more effectively sought as staff specialization, time and resources are coordinated.

It is evident that values, space, personnel specialization and content affect organization. Further illustrations of critical influences for organization to promote individualization may be found in the work of Erik Erikson (1). Erikson's work is derived from a career in child psychiatry and cross-cultural studies of the life of Hitler, Martin Luther, Christ and Gandi. From his works and his intense psychotherapy with children, he has developed eight stages of man that have particular importance for individualization of instruction (p. 87). For example, the first psychosocial crisis of every child is to learn an appropriate culturally determined ratio between trust and mis-trust. Trust is essentially derived from the maternal object, the mother person in the child's life. He develops a predisposition that his needs will be met or not met. Many kindergarten children come into the school terrified. It's not an adventure to look forward to. It's an adventure about which to be very wary. Each child is seeking to know "How am I going to cope with this and how am I going to survive?"

Another stage of development is autonomy vs. shame. As the child approaches the age one and becomes mobile, he seeks to become a "can-do" person. To stimulate the development of a "can-do" personality parents may have to decide if valued objects are to be put away. A

crisis may occur when the child's autonomy needs endorsement but a valued object is broken. In a different system of values a child might be taught not to touch treasured objects.

Other stages emerge as a child enters school. As a child exerts initiative in becoming a coping person, is his initiative sustained and honored for what it is? As a child moves into school and struggles through industry vs. inferiority, can the school further sustain him? Can the schools be structured so the child has an opportunity to take advantage of and utilize the technological cultural artifacts such as pencils, finger paints, books, pictures and so forth that are so much a part of the schools? How can teachers communicate industry and competence rather than inferiority, shame and guilt? What does it do to children if in the school thirty kindergarteners are continually doing the same things at the same time? The educational literature and research suggest that this should not be so.

The use of organization to create an environment in which individualization is facilitated contributed to the rationale for the development at Fredonia of a Pupil-Oriented and Individualized System of Education - the POISE Model. This model includes ideas from many other individualized instruction programs on the current scene. It borrows heavily from the University of Wisconsin Multi-unit Plan and it represents an effort to create a school environment which promotes individualized instruction as a primary goal. In short, the POISE Model is based upon the systematic relationships of organizational components directed toward meeting the needs, interests and capabilities

of individual pupils rather than those of groups.

The POISE Model represents an ideal which can probably never be reached; in other words, complete individualization of instruction is unlikely in any school. But the hypotheses underlying the Model is that the needs of individual pupils can be better met in a system planned to meet their needs than in a school organization built around pupil accounting and group instruction procedures. In the POISE Model, decisions about assignments of children are made by teams of teachers collaborating in their instruction to provide more opportunities and more alternatives for children and teachers. Such decisions must be based on the best data available to describe pupils, teachers and instructional goals. Therefore an information system is required for individualized instruction. The resources can be balanced for individual attention for each child through tutoring and small groups. Flexibility in use of staff for instruction and planning can be achieved by frequent placement of children in groups of five, ten, fifteen, twenty and sometimes one hundred to meet common needs. Further, through use of a pool of teachers, the instructional group or individual child, is not limited to the particular skills of one teacher, but profit from the skills of many.

Another assumption of the POISE Model is that most important decisions should be made by teachers and children where the action is - in the classroom. Therefore, teachers are significant decision makers. Administrators should support such a role for teachers. In this context, if schools are to improve, administrators must become masters of

instructional designs and evaluation for assisting the instructional team as a source of evaluative feedback to help teachers achieve their instructional goals. Principals must provide the kinds of information that teachers and administrators together decide is needed. This is a new leadership role. It does violence to many administrators and teachers but it is supportive and provides for accountability. Decision-making latitude must be with the instructional team.

There are teachers who have special competencies in subject matter. Some are going to become specialists. Some are going to become irreplaceable with respect to language arts. Others may contribute organizational capabilities. For example, Calvin Taylor (3) has identified organization as a particularly creative skill - a regenerating sort of capacity that only some people possess. Taylor further states that nearly all teachers are above the norm in one or more of six creative abilities. If this is the case, this validates and legitimizes the organization of unique roles, within instruction and administration. The combined creative capacities of individual personnel provide a force towards team teaching.

The path to individualization of instruction is a rugged road. The essential delight is the regeneration of self through entering into more open individualization systems. Individualization is a gigantic task. Much verbal support is given to it, but there are few places where it is occurring. The first step along the way is to select one piece of the action - maybe working toward individualization in one subject area only. This will require careful planning by the staff, approval by the community and commitment by the teachers. Further

attempts at individualization should be undertaken only when the staff feels that initial efforts have been successful and there is readiness for new effort.

An additional point must be made. There is danger that, as a practical matter, individualization may be thought of as only a means of helping children learn specific subject matter skills. The discussion of Erikson (1), it will be recalled, suggests that children are going through certain developmental stages - specific developmental stages with respect to cultural content and personality. Certainly, individualized attention must also assist children through these stages. The task is to enable the school to organize with respect to diagnosis, instruction and supportive interpersonal relationship for every child. Each teacher must be engaged as effectively as possible in meeting the unique needs of each student. That is what carefully planned individualization of instruction seeks to do.

Bibliography

1. Erik Erikson, Childhood and Society, 2nd edition, 1963, W. W. Norton & Co., 55 Fifth Avenue, New York City, New York, 10003.

2. Calvin Taylor, "Be Talent Developers," NEA Journal, Washington, D. C., December 1968, p. 67-70.

Worksheet

	Psychosocial Crisis	Radius of Significant Relations	Related Elements of Social Order	Psychosocial Modalities
I	Trust vs. Mistrust	Maternal Persons	Cosmic Order	To get To give in return
II	Autonomy vs. Shame, Doubt	Parential Persons	"Law and Order"	To hold (on) To let (go)
III	Initiative vs. Guilt	Basic Family	Ideal Prototypes	To make-going after. To make like-playing
IV	Industry vs. Inferiority	"Neighborhood School"	Technological Elements	To make things (completing) To make things together
V	Identity and Repudiation vs. Identity Diffusion	Peer Groups and Outgroups; Leadership Models	Ideological-Perspectives	To be oneself (or not to be) To share being oneself
VI	Intimacy and Solidarity vs. Isolation	Partners in sex, friendship, cooperation, competition	Patterns of Cooperation and Competition	To lose and find oneself in another
VII	Generativity vs. Self-Absorption	Divided labor and shared household	Currents of Education and Tradition	To make be To take care of
VIII	Integrity vs. Despair	"Mankind" "My Kind"	Wisdom	To be, through having been To face not being

Individually Guided Reading

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The Wisconsin Research and Development Center for Cognitive Learning has as its focus the development of a system of Individually Guided Education (IGE) for the elementary school. The Center's program at present includes the development of curriculum components in reading, which is discussed in this paper, in mathematics, and in science. Motivational procedures have additionally been devised to be used in conjunction with the individualized curriculum programs. We will consider one of these, the individual conference, to motivate outside reading. Earlier the Center developed the organizational component of the IGE system, the multiunit school. This organizational pattern for elementary schools facilitates the complete implementation of IGE through a flexible and responsive arrangement for decision-making and through differentiated staffing.

What exactly is IGE? IGE is a system for formulating and carrying out instructional programs for individual students in which planned variations are made in what children learn, in the rate at which they learn, and in the way in which they learn. Some other individualized programs vary only the rate at which children learn. IGE also differs from other individualized programs in that the program tailor-made for the individual is frequently carried out in small groups. There are many instructional objectives for which the group is either an essential or

desirable setting for learning to occur.

With regard to providing for differences in what children learn, we are suggesting, for example, that a child who, at age nine or ten, reads independently can be presented with materials and activities not designed to teach reading. Because he doesn't need as much instruction in reading, he can study other contents in greater depth than should the child who is just beginning to acquire essential reading skills. Some children of age ten will have to spend considerable time yet in learning to read. This kind of variation in what children learn is a main concern at the present time.

Providing for differences among students in the rate of learning is not so difficult when suitable instructional materials and procedures are available. Children may not assimilate concepts at a steady rate, however, if only one type of materials, programmed or semi-programmed material with which the pupil interacts alone, is provided for all children.

In the Center now and in our cooperating developmental schools, efforts are made to provide for two different modes or styles of learning. One style characterizes those children who read fairly well for their age level and who study and learn with relatively little interaction with teachers and other children. For children who read, have basic concepts, and learn through interacting with printed and audio-visual material, an independent mode of learning is suitable. There are other children who do not learn well through independent study. Many of these children do not read well yet. They need more audio-visual

and manipulative experiences with the referents for which concepts stand. Most important, they learn better in small groups interacting with one another under the guidance of a skillful humane teacher. They typically require direct assistance from the teacher, first in learning basic concepts and skills and then in becoming increasingly independent.

This second mode, in which children work in small groups with a teacher may not seem markedly different from what is going on in many classrooms today with their three or so groups in reading and possibly other skill areas. But it is different. Differences are best understood throughout consideration of the IGE Learning Cycle, presented in Figure I. P. 93. Let us consider how this cycle is operationalized in reading, and particularly in word attack.

First the school adopts as an instructional goal for all children "independence in word attack with respect to phonetically and structurally regular words and common irregular words." This goal is given higher priority than some other goals; when choices have to be made between instructional activities in word attack and in other areas, more often than not word attack gets the nod. The goal is analyzed into forty-five specific behavioral objectives. It is presumed that when the child has attained the forty-five behaviors, he has attained the goal. The objectives are stated in the Rationale and Guidelines, (2) which gives an overview of the Wisconsin Design for Reading Skill Development.

The next step in implementation of the word attack portion of the Wisconsin Design, assuming adoption of the goal and objectives, is preassessment of each child with respect to the current status of his skill repertoire. For this purpose, machine-scoreable booklets are available which measure a set of the skills at one of four levels (A through D) of progressive difficulty. The results of the testing are recorded in terms of mastery or non-mastery of each skill on either a wallchart, individual folder, or keysort card.

Next, children with similar deficiencies are grouped together for about two or three weeks for instruction. Within the group, the teacher may plan individualized programs which take into account the child's preferred learning mode, available materials and other resources - human resources in the form of aides and older children, for instance - and his rate of learning. Not all children will need to stay in the ad hoc group for the time alloted. To assist the teacher in designing suitable programs for each individual, a Teacher Resource File is provided, in which many printed and other materials are keyed to the behavioral objectives. In other words the school can use whatever resources it presently has to teach the child word attack skills.

When the child appears to have mastered the skill, he is again assessed. Guides for informal assessment, as well as a pencil and paper test on a single skill are available for this postassessment. If the child has mastered the skill, he is dismissed from the group, and begins working toward the attainment of another objective. If he does not master the skill, learning sequences in the skill or prerequisite skills are redesigned and implemented.

The materials necessary to implement this system are now available from National Computer Systems, 4401 W. 76th Street, Minneapolis, Minnesota, 55435.

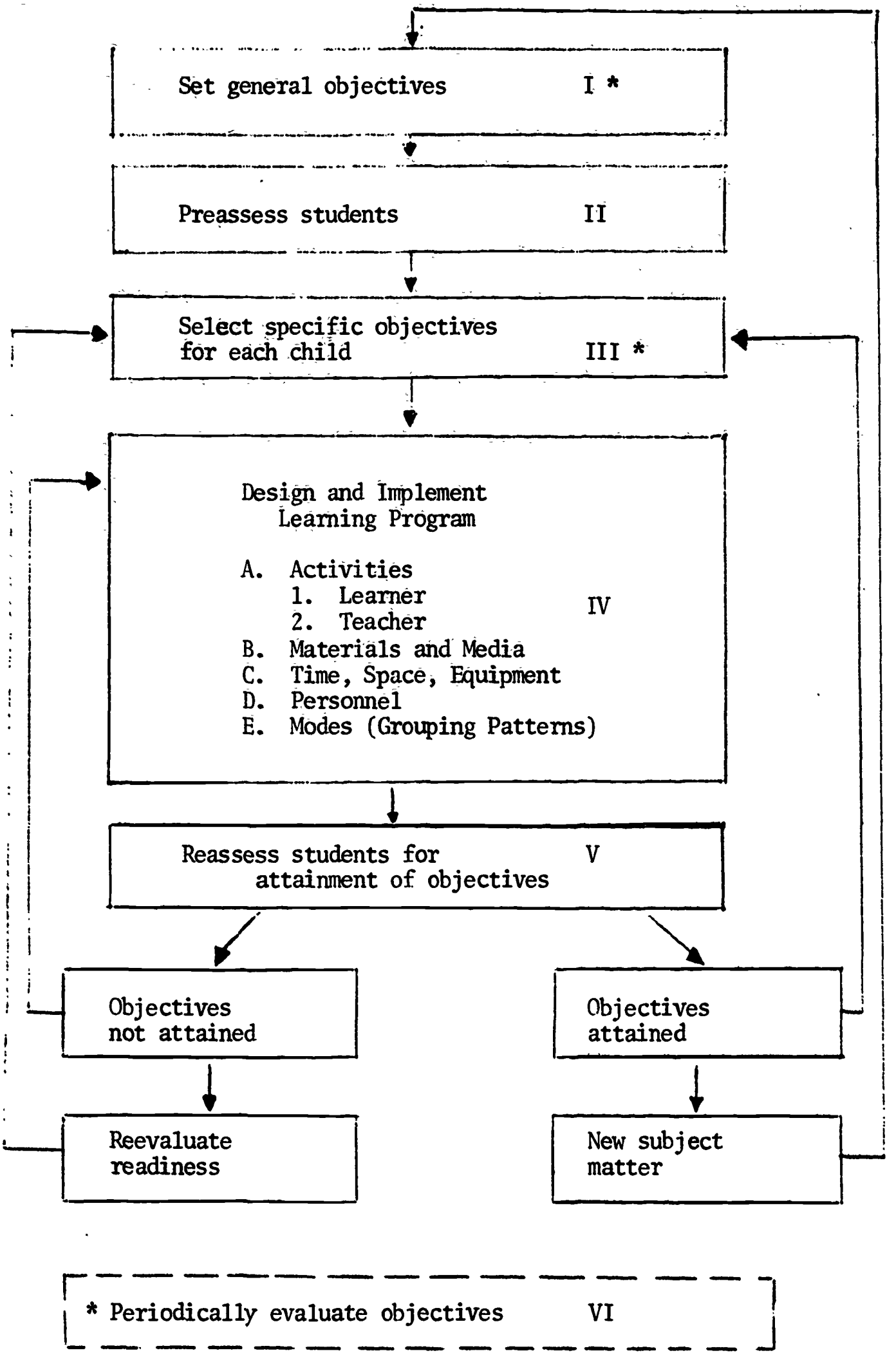
Of course, there is more to reading than word attack. The developers of the Wisconsin Design have specified five other component skill areas and listed the composite skills in an Outline of Reading Skills. One concern of the Center is helping children like to read and encouraging them to spend leisure time in recreational reading. Through a procedure by which children who need an adult's encouragement to read are identified and talked with regularly about their outside reading, dramatic increases in the amount read have been achieved. The procedures for initiating a program of Individual Conferences in Reading are set forth in detail in Center Practical Papers which are available without charge. A videotape or kinescope is also available which illustrates the application of motivational principles in the conference. These inservice materials have been successfully used with teachers, instructional aides, and volunteers. To obtain the materials, contact the Director of Dissemination, Wisconsin R & D Center for Cognitive Learning, 1404 Regent Street, Madison, Wisconsin, 53716.

Bibliography

1. Otto, Wayne, and Askov, Eunice. The Wisconsin Design for Reading Skill Development: Rationale and Guidelines. Minneapolis, Minn.: National Computer Systems, Inc., June, 1970.

Figure I

IGE LEARNING CYCLE



Microteaching and the Minicourse - A Brief Overview of the Programs of the Far West Laboratory

Dr. Walter Borg, Program Director, Far West Laboratory for Educational Research and Development, gave an overview of the independent microteaching approach to teacher education. Through this approach a series of minicourses have been developed each of which deals with a small, highly specific set of skills necessary for effective teaching. The minicourses are organized into a series of events: (1) the specific skills are identified and discussed; (2) the skills are demonstrated by a model teacher; (3) the student teacher prepares a lesson segment of from 3-8 minutes in duration; (4) the student teaches a small group of pupils emulating the model as nearly as possible while his performance is being recorded on video tape; (5) the student reviews his taped performance noting the extent to which his performance approximated that of the model; (6) the student replans and reteaches the lesson segment to a new group of pupils. This cycle can be repeated until the student has developed the particular skills to a desirable level of competence.

The microteaching approach is being expanded so that minicourses covering a broad spectrum of skills will be available. A list of minicourses available and currently being developed is presented on the following pages. Of particular interest to elementary school teachers are numbers 1, 2, 4, 5, 8, 9, 10, 15, 16, 18, 19, and 21.

		Testing Dates*
Minicourse 1:	"Effective Questioning in a Classroom Discussion" (Elementary) has been commercially produced and is available from Macmillan Educational Services, Inc.	
Minicourse 2:	"Thought and Language: Skills for Teaching the Child and Minimal Language Development? Course Goal: To increase teacher skills that encourage the acquisition of language.	OFT Oct. 1969
Minicourse 3:	"Effective Questioning in a Classroom Discussion" (Secondary) Course Goal: To increase the effectiveness of the questioning techniques of secondary school teachers and the quantity and quality of student participation (grades 7-12) in class discussion situations.	OFT Oct. 1969
Minicourse 4:	"Verbal Interaction" Course Goal: To train teachers to categorize their classroom behavior in the Flanders system.	MFT Oct. 1970
Minicourse 5:	"Effective Tutoring in Elementary School Mathematics" is being commercially produced and will be available from Macmillan Educational Services, Inc., in Course Goal: To increase teachers' effectiveness in diagnosis, demonstration of problem-solving procedures, and evaluation of learning during math tutoring sessions; to increase the amount of time teachers spend in structured tutoring of students' math difficulties.	Nov. 1970
Minicourse 8:	"Organizing the Kindergarten for Independent Learning and Small Group Instruction" Course Goal: To provide kindergarten teachers with a set of skills (organizational procedures) that will make it possible for them to instruct, uninterrupted, a group of 5 children for ten minutes while the remaining 20 or more children work independently.	OFT Oct. 1969

*OFT = Operational Field Test, MFT = Main Field Test, PFT = Preliminary Field Test

		Testing Dates
Minicourse 9:	"Thought Questions in the Intermediate Grades" Course Goal: To increase teacher effectiveness (grades 4-8) in asking questions which require the use of complex thinking skills.	OFT Oct. 1970
Minicourse 10:	"Role Playing as an Instructional Technique" Course Goal: To train teachers in the use of role-playing skills for wide range application in the classroom.	PFT Oct. 1970
Minicourse 11:	"Teaching Skills that Develop Independent Learning in the Secondary Classroom" Course Goal: To develop teacher skills that facilitate learner independence in a wide range of subject areas.	PFT Nov. 1971
Minicourse 13:	"Expository Teaching" Course Goal: To increase secondary teacher effectiveness in explaining and in conveying information through the use of oral exposition.	MFT Oct. 1970
Minicourse 14:	"Improving Teacher and Pupil Skills in Discussing Controversial Issues" Course Goal: To develop teacher and pupil skills in discussion and critical appraisal of controversial social issues.	MFT Jan. 1971
Minicourse 15:	"Teaching Skills that Develop Independent Learning in the Upper Elementary Years" Course Goal: To develop teacher skills that facilitate learner independence in a wide range of subject areas.	OFT Oct. 1970
Minicourse 16:	"Peer and Cross-Age Tutoring" Course Goal: To train pupils in skills needed to function effectively as tutors of their peers or younger pupils.	PFT June 1971
Minicourse 17:	"The Use of Role-Playing in the Social Sciences" Course Goal: To develop teacher skills in using role-playing techniques to demonstrate and analyze social and governmental situations.	PFT Dec. 1972

		Testing Dates
Minicourse 18:	"Teaching to Increase Reading Proficiency" Course Goal: To develop teacher skill in the use of instructional procedures that improve student learning in the area of reading.	PFT Oct. 1970
Minicourse 19:	"Inquiry Strategies to be Used in the Classroom" Course Goal: To develop teacher skill in the use of multiple inquiry strategies in the elementary classroom.	PFT Jan. 1972
Minicourse 20:	"Divergent Thinking" Course Goal: To help the teacher to establish a classroom environment and to use teaching techniques that encourage divergent thinking.	PFT Oct. 1970
Minicourse 21:	"Problem Solving" Course Goal: To help teachers in the intermediate grades to set up problem solving situations, and assist students in developing problem solving tactics.	PFT Dec. 1971
Classroom Simulation 1:	"Techniques for Evaluating and Solving Pupil Disruptions to the Learning Environment (Upper Elementary Years)" Course Goal: To develop teaching skills in solving problems that result from the actions of pupils who disrupt the classroom learning environment.	PFT Dec. 1970
Stimulation-Discussion-Action 1:	"Confrontations - A Human Relations Training Unit" Course Goal: To enable teachers to (1) analyze social-minority problems at their school, and (2) propose and implement solutions to those problems.	Released on an Experimental Basis

A description of these and other minicourses together with an explanation of the microteaching approach to teacher education can be found in:

The Minicourse. Borg, Walter R. et. al., copyright 1970 by the Far West Laboratory for Educational Research and Development, Macmillan Educational Services, Inc., 8701 Wilshire Boulevard, Beverly Hills, California, 90211

The new address of the Far West Laboratory is 1 Garden Circle, Hotel Claremont, Berkeley, California.